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ORIGINAL COMMUNICATIONS.

ON THE USE OF INTRA-UTERINE STEM-PESSARIES.

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BY ALBERT H. SMITH, M.D.,
President of the Society.

SO much has been said for and against the use of intra-uterine stem-pessaries, and especially have such violent and sweeping condemnations been uttered recently against them, that it becomes impossible, except through careful observation and the results of clinical experience, to arrive at a just estimate of their value and to assign them their proper place in the list of surgical appliances. While some recent authorities, as Barnes, Goodell, Tilt, Hewitt, Schroeder, and Winckel, accept them without question as therapeutic agents, to be used, of course, discreetly and judiciously,—as may be said of all therapeutic measures,—yet it must be admitted that the great proportion of gynecologists stand with those (as Thomas and Courty, of Montpellier, and De Sinety) who teach that they are instruments whose capabilities for harm far outweigh their possible usefulness, and some even in the more extreme position of unqualified condemnation, with Nonat and Emmet. When we find it stated by the last-named eminent author—excelled by none as an accurate, honest, and conscientious observer of his cases—that “experience will at last teach every one that no permanent benefit is ever derived from its use, that no degree of tolerance is ever established, but that sooner or later, in almost every case, mischief will result,” it can be considered only as an unpromising work to attempt to convince the mass of the profession that there can be any virtue in the intra-uterine stem. And yet I have had such excellent results from its use, and have come to look upon it as such a necessary therapeutic means in the management of certain kinds of cases, that, at the suggestion of a valued friend among us, I have determined to make it the subject of a paper, in which I can bring forward my own views and observations,—not authoritatively at all, but mainly to elicit discussion from others

who have had experience perhaps far greater than my own.

The intra-uterine stem appears first to have been proposed by Velpeau, who, however, did not strongly urge its use, and it was abandoned until again brought into notice by Sir James Y. Simpson, more with reference to its use as a dynamical exciter of functional activity than as a mechanical agent in reducing deviations. Shortly afterwards Valleix and Kiwisch came out boldly in favor of its mechanical application, using it in combination with an external framework of support. Since his day it has been in use, with various modifications in shape and material and adopted with reference to its efficacy in various morbid conditions.

The forms in which it has been used are (1) the *simple* stem, with bulb or disk in the vagina, or attached to a vaginal pessary or to an external framework, and (2) the *bifurcated* spring stem. Of these, I should reject the stem of Valleix, or any of its modifications with external attachment for the purpose of a permanent fixation by grasping a solid rod in the uterine canal, as utterly unsound in theory and dangerous in the extreme in practice. The essential qualification of a *vaginal* pessary is that it shall recognize and permit the natural mobility of an organ which was arranged by nature specially for adaptation to the various changes of position of the body and the various relations of surrounding viscera which depend upon their distention or collapse, and no pessary is safely left in the vaginal canal without close watching which in any degree depends for its action on pressure upon an immovable basis of support, such an instrument soon showing that it has been adopted in violation of nature's teaching, by the painful sense of pressure at first, and soon afterwards by the development of ulcerative inflammation at the point of firm contact, and, if long left without relief, perforations and fistulous openings into the bladder, or rectum, or peritoneal cavity. If, then, such pressure is unjustifiable in the vagina, with its ordinary slight sensitiveness and its capacity of tolerance of pressure, how vastly more should we hesitate to subject to such an influence the cavity of the uterus,—so sensitive and easily excited to inflammatory action, and so liable to transmit its irritations to the

neighboring peritoneum and connective tissue! If there are dangers arising from the simplest form of stem which require careful and conscientious looking after,—which I not only am free to admit, but wish to impress upon you seriously,—I think I am justified in discountenancing absolutely the fixed stem, which can never be required, and must always be vicious in its influences. This statement will apply equally to fixed stems which derive their support from vaginal pessaries not freely movable in the pelvic cavity and permitting the natural change of position of the uterus, such as the hysterophore of Zwancke or Schilling,—dangerous instruments in themselves, even without any intra-uterine attachment. In short, the only stem with vaginal combination which I have ever felt warranted in using is that of Dr. Chadwick, of Boston, of which I shall speak hereafter.

To the spring or self-retaining stem I can scarcely give a more enthusiastic commendation than to those just mentioned, although it is certainly a safer instrument, and, as it has the endorsement so fully of such authorities as Goodell and Barnes, I must accept it as a form of stem capable of useful application. The objection to it, however, not only upon theoretical grounds, but also from results which I have personally observed in many cases, is that it retains its position in the cavity by the continuous lateral pressure upon the internal surface of the uterus of expanding wings. That this continuous pressure is not so pernicious in its influence as that of the stem with external fixed attachment I am very ready to admit, because in the case of the latter the pressure is attended with rude and violent thrusts against the sensitive tissues with every change of the position of the body or of surrounding organs; but even the gentle pressure of the spring exerted uniformly and continuously tends to establish ulcerative inflammation and ultimately to imbed the arms of the stem in the uterine tissue, exciting general parenchymatous metritis and metrorrhagia. The least objectionable form of this variety is that of Chambers's, having a bifurcated vulcanite stem, making only gentle pressure; Lawson Tait's, with its soft-rubber wings, like those of Sir Henry Thompson's self-retaining catheter, and Bantock's, with the steel springs, are instruments which I should hardly expect

to have retained safely in any uterus with ordinary sensibility for twenty-four hours.

All that I consider necessary or desirable for ordinary use is a stem consisting of a simple rod, terminating in a rounded expansion at one end and in a flat disk at the other. It should be of non-corrosive material, which can be made slender enough, while retaining its strength and firmness, to be slightly flexible and elastic, and to occlude as little as possible the canal of the cervix. Vulcanite fulfils these requisites completely. Its length should vary with that of the canal in which it is to be inserted, never reaching to within three-eighths of an inch of the distance from the level of the os uteri to the roof of the uterine cavity. The inner extremity should end in a slight bulb, not so large as to interfere with its ready introduction or to press with its lateral surface heavily upon the uterine wall, nor so small as to present any sharpness to catch in the rugæ of the cervix in its introduction. The other end should be inserted into the centre of a flat circular disk, smooth and free from sharp edges, thin enough to occupy practically no space in the vaginal canal, or, by its pressure upon the posterior wall, either to ulcerate the mucous membrane or excite rectal tenesmus, and large enough in diameter to present a comfortable surface to the vagina and to prevent any possibility of its entering by pressure into the cervical canal, and thereby permitting the inner end to strike upon the fundus uteri. Such an instrument can be introduced into the uterine cavity with little or no pain, can be worn, in cases free from parenchymatous metritis or parametritis at the time of introduction, without consciousness of its presence,—as I can testify from personal experience in many cases,—for months, interfering with neither the social nor the domestic duties of the patient. I have used it now for two years with great satisfaction, excluding every other form except that of Dr. Chadwick's, which in a class of cases—which I will more fully consider hereafter—I sometimes have substituted successfully. This instrument consists of the stem which I have described, having inserted into two holes in its disk, upon the vaginal surface, a wire staple so bent into a hook-like shape that it will receive into its grasp a flexible ring pessary; this to be not large enough to prevent free move-

ment of the cervix in the pelvic cavity, but only to retain it in its direction towards the sacral hollow,—this being free from the objections urged against the stem with vaginal attachment involving a fixation of the stem in the pelvic cavity.

The introduction of the stem involves often at first a good deal of nice and delicate manœuvring when it is used in a case of flexion with much distortion of the canal, but so soon does the canal adapt itself to the presence of the straight stem that if for any reason it requires removal and readjustment the second introduction becomes very easy; and I have a patient—a lady of intelligence and close observation—suffering from retroflexion attendant upon a small, sensitive fibroid in the posterior wall, who has learned to remove and replace the stem, as well as the vaginal pessary, both of which she has now worn for several months.

That the stem should never be inserted with any considerable force need scarcely be stated: it is a rule which suggests itself to every careful practitioner. The speculum can never be used with advantage, and is usually a serious hindrance to the passage of the stem. In any case of flexion the presence of any form of speculum, even Sims's, would interfere with the free movement of the outer extremity of the stem in adapting the inner end to follow the course of the canal. Before selecting the stem, of which three sizes are necessary, —two, two and a quarter, and two and a half inches,—the length of the uterine cavity should be accurately measured by the introduction of a graduated sound, and the stem selected which will measure, from its tip to its insertion in the disk, three-eighths of an inch less than the measurement of the canal. In using the sound for this purpose, the operator should at the same time observe carefully the course of the canal and its perviousness, and, if it be very tortuous or at any point closely constricted so as to render the passage of the sound difficult, there should be introduced either a flexible or metallic bougie or a uterine expanding dilator, such as Ellinger's or Wilson's; and in some cases I have found it desirable, when the canal was very tortuous, to pass the narrow stem between the separated blades of the dilator while still in position. The plan mentioned by Dr. Goodell, in a discussion in the Transactions of the Gynæ-

cological Society, of retaining the sound in the cavity and following its course by the point of the stem, is a good one in many cases. It is rarely of advantage to grasp the disk with any forceps to steady it, though in some cases of closely-resisting vaginal orifice, where the distance of the os uteri from the perineal commissure is much greater than the length of the stem, it becomes a necessity. It should then be grasped by some slender forceps giving a firm hold upon the disk, but occupying as little room as possible in the vaginal opening. As a rule, the easiest method of introduction of the stem is by the unaided fingers, and with a little practice one becomes quite expert at introducing the stem into a canal of any ordinary condition of flexion or tortuousness. The first step is to find the os uteri and pass the point of the stem into it directly until it reaches the point of flexion. If the os be near enough to do this before the disk enters the vaginal opening, it is a very easy thing; if not, the whole stem, disk and all, should be passed into the vagina, and, by means of the first two fingers, gradually brought into position for the end to enter the os. It should be grasped between the inner surfaces of the fingers, and, after reaching the point of flexion, the axis of the stem should be changed in its direction, carrying the cervix with it until it corresponds with the axis of the canal, when it will, in most cases, readily slip up beyond this point into the uterine cavity, until its course is arrested by the disk resting against the point of the cervix. In a retroflexion this is usually very easy, because the disk can always be lifted high enough against the vesico-vaginal septum to allow the point of the stem to be directed into the canal beyond the point of flexion; but in cases of antelexion it is sometimes more difficult. In either case it will be found to facilitate the insertion to make a leverage upon the stem by a counter-pressure of one finger upon the disk while the other is used to make traction upon the stem, or the reverse. In retroflexion the disk would be drawn towards the vaginal roof by the second finger, while the index presses the stem downward towards the line of axis of the canal; in antelexion the index pushes the disk towards the posterior cul-de-sac, while the second finger draws the stem forward, thus

slightly counteracting the flexion and letting the point of the stem slide or creep, as it were, along the anterior wall until it slips into place. This is often aided by a pressure with the other hand upon the fundus resting behind the pubis, carrying it more towards the centre of the brim and acting in opposition to the traction forward of the stem in the vagina, tending thus very materially to straighten the canal and facilitate the passage of the stem.

The question next arises, How is the stem to be kept in position? And it is in reply to this question that we have so many of the devices which have by their pernicious influence brought the stem into disrepute. Courty and Schroeder retain it in position by vaginal tampons; Tilt, by a boxwood vaginal disk; Chambers and Bantock, by their diverging springs; Tait, by his soft-rubber projecting spikes; and others, by vaginal or external attachments. In reality, there is no difficulty whatever in keeping the stem in place: it is the least of all troubles connected with its use. For whatever purpose it may be used, the natural relation of the uterus to the pelvic canal should be insured, which is with the long axis of the uterus corresponding as nearly as possible with the axis of the superior strait of the pelvis, the os uteri looking backward towards the sacral excavation. It will readily be seen that so long as this relation is preserved the stem cannot possibly slip out, because the proximity of the os uteri to the posterior vaginal wall is so maintained that the stem, which then looks upward and forward towards the pubic brim, cannot slip out of the uterine canal any appreciable distance without the disk striking against the vaginal wall; and if the falling out of the stem has been the result of a sudden lifting of the uterus towards the pelvic brim, —which alone can cause it,—the return of the uterus to its position will make the stem again enter the canal by pressure of the disk against the vaginal wall; and never would it be possible for the stem to slide so far from the canal into the vagina as to get its upper end below the point of flexion and be unable to return. So, then, when the cervix is in its normal position in relation to the pelvic axis the stem cannot get away. Thus it will be seen that in a case of flexion with anteversion or simple descent the stem, after introduction, is firmly and surely retained, there being

no disposition of the cervix to turn forward. In flexion with retroversion, until the version is corrected, the os uteri presents towards the vulvar opening, the uterine axis being in correspondence with the axis of the vagina, and there is then nothing to prevent the stem from sliding out into the vagina and being lost. But, as this is a condition which should never remain uncorrected in any patient under treatment, the retroversion always requiring reposition, so soon as this restoration is made and the cervix carried backward the stem is again safely secure. This is done by the introduction of the lever-pessary, which, passing into the posterior cul-de-sac, draws the cervix backward, restores the body of the uterus to its normal relation to the pelvic axis, and thus insures the retention of the stem, by means not used for that purpose, but for the relief of a condition quite independently necessary. Here comes into play a most valuable function of the stem, which probably all gynecologists who use it have discovered, but which has been authoritatively suggested first by Schroeder, viz., that of a repositor more efficient and vastly safer than any of the instruments ordinarily in use. The stem converts the retroflexion into a retroversion, to correct which it is only necessary to press the disk gently backward with the finger towards the sacrum, and the uterus revolves upon its horizontal axis, the fundus passing upward and forward to its proper position. Schroeder recommends the instrument for this purpose even in cases where there is no flexion, and where the stem is removed so soon as the version is corrected, using it simply for its safety as an elevator. But unfortunately we sometimes meet with cases in which we cannot maintain the restored position of the retroverted uterus by the lever-pessary, because either from congenital anomaly, or from traumatic causes, or from gradual adaptation of the tissues to the abnormal position, the posterior cul-de-sac is obliterated and the posterior wall of the cervix is almost or quite continuous with the vaginal wall. There is therefore no resting-place for the posterior bar of the lever-pessary. Here, then, comes in the ingenious little contrivance of Dr. Chadwick, which accomplishes the same results by substituting for the backward traction of the lever-bar upon the cervix in the cul-de-sac a backward pressure of

the stem upon the cervical wall within its cavity, the pressure being made by the soft ring fitting closely into the wire hook below the disk of the stem, the ring being large enough to prevent the cervix from coming forward, and yet small enough to allow a free motion in the pelvic cavity. I have had with this instrument some excellent results in cases where everything else failed. Its great objection is the tendency of the stem, by constant pressure against the cervical wall posteriorly, to make a cleft in the tissues and gradually imbed itself; but I had one patient who actually wore one of these instruments for over eleven months, to her great relief, before I found sufficient need, after repeated examination, to remove it. During this time she came to my office frequently to consult me and have examinations made, and was able to perform all of her domestic duties, as well as to enjoy social pleasures. After I removed the stem I introduced a simple ring, the lever being inapplicable on account of the conditions mentioned above; and now, nearly two years since, the flexion has never returned, and she is quite comfortable. Usually, however, I have not been able to keep in place this form of stem-pessary nearly so long.

I come now to consider the range of usefulness of the intra-uterine stem. In reference to the purposes for which it is available, its modes of action may be divided into mechanical and dynamical. Under the first head may be ranged all its applications for restoring deviations or malpositions of the uterus, which will be almost exclusively those complicated with flexions. Inasmuch as antelexions are much more frequently found as uncomplicated with other change of relation than retroflexions, which are usually associated with version, and as they are, moreover, less amenable to other treatment than any other form of deviation, it is in this form of deviation that we are most frequently required to resort to the use of the stem, and it is in these cases that I have seen such admirable results. They present most frequently, though by no means exclusively, in nulliparous women, and are attended usually with vesical irritability and dysmenorrhœa; and if the married woman was the subject of such a condition before marriage, she will most probably, though not necessarily, be sterile. Time does not allow me, nor would it add ma-

terially to the interest of the subject, to go into the details of the cases treated, but I will simply say that I have seen all of these conditions relieved by the stem, and in a majority of those thus relieved the benefit has been permanent, the flexion not again returning. The cases in which sterility has been obviated by the wearing of a stem for a few months, pregnancy occurring shortly after its removal, have been among the most satisfactory results. That pregnancy is not prevented by the presence of the stem is well established. The relief to the bladder from pressure of a markedly antelexed uterus by the stem when, upon examination, a tumor is found in the anterior cul-de-sac, at first giving the impression of a fibroid pressing upon the bladder, but, upon the straightening out of the uterus, with the stem disappearing entirely, is also one of the decided boons from the use of this instrument.

In retroflexion, which is much less frequent than antelexion, and usually less marked, we very seldom require the stem, because the condition yields to the influence of the lever-pessary in elevating the fundus and removing the backward pressure; but there is a class of cases of retroflexion in which we get most signal results. These are the cases in which the flexion assumes the marked retort shape, where we find the fundus of the uterus bent backward at such an angle that it is found as a well-recognized tumor in the posterior cul-de-sac. After satisfying one's self that it is the fundus of a retroflexed uterus, a lever pessary is introduced to raise it, which at first promises good results, but only to bring disappointment time after time; the fundus and body of the uterus,—which while the finger of the operator is kept upon the front bar of the pessary remain in natural position apparently, the cervix turning back in its normal relation,—so soon as the finger is removed, begin to creep over the posterior bar of the pessary, until the latter rests not against the body of the womb, above the cul-de-sac, carrying it upward, but in the angle of the flexion, the neck in front and the fundus behind grasping it between them and pushing its anterior bar forward against the pubis, or perhaps extruding it entirely beneath the pubic arch. The lever in this case does no good, but, on the contrary, aggravates the mischief. Here, then, comes in the stem to perform an admirable

function: it straightens out the whole uterine canal, takes away completely the apparent retro-uterine tumor, and the lever-pressary, now introduced behind the cervix, acts upon a normally-shaped uterus, and is enabled to perform its whole duty as an elevator with permanent relief. Many, many cases of this kind have fallen under my care in my own practice and in the practice of friends, baffled and discouraged by repeated disappointments, where the use of the stem for a few months seemed to bring about a permanent restoration of the normal uterine axis, which upon its removal showed no tendency to be again deflected, the lever having no further interference with its successful working.

There is met with not unfrequently, in the unmarried and in the sterile, a peculiar flexed uterus, presenting a soft, flaccid, slender, elongated body,—so soft and flabby that it is scarcely appreciable to the most careful bimanual or rectal touch, and one for a moment believes that he has a rudimentary uterus or a cervix without a body; and not till after the sound has with difficulty been made to reach the fundus, and can be felt through the abdomen, is he convinced that there is a uterine cavity at all; and he then feels the uterine body, into which the sound enters perhaps three or three and a half inches, like a long, slender cylinder, no thicker than the thumb. In such cases I have seen the intra-uterine stem strengthening and stiffening up the uterus, giving a basis for the lever to act upon, and between them, in a comparatively short time, the uterine walls became more condensed and appreciable to the touch, and the organ shortened and widened into a normally-shaped uterus.

The dynamic powers of the stem are exerted in its stimulant effect in two morbid conditions, viz., amenorrhœa and uterine hypertrophy, whether the result of hyperplastic increase or defective involution after pregnancy. In the first of these conditions it was that Sir James Y. Simpson brought forward to the notice of the profession his metallic stem, the results of which were due more probably to its presence as a foreign body in the uterus than to any supposed galvanic influence. In the second condition mentioned, viz., uterine hypertrophy, I have had some very remarkable results: uteri enlarged from parenchymatous metritis, and subinvolved uteri, taking on atrophic change promptly

after the insertion of the stem, and a stem which was far from reaching the fundus at first requiring to be exchanged for smaller and smaller sizes, until the uterus reached its normal dimensions.

That the stem is an instrument capable of great mischief if recklessly used I am not only free to admit, but would earnestly impress upon every member of this Society. But of what active remedial agent cannot almost as much be said? That it may light up a fire which will run wild through the pelvis, perhaps ending in suppurative cellulitis, perimetritis, and even death, is true; but the uterine sound has done the same in careful hands,—how much oftener in careless hands than the stem we cannot say. I would lay down rules of caution, from which I never depart except in rare and well-appreciated cases:

Never neglect to measure the uterine cavity; never use any force in introducing the stem; never use it when complete mobility of the uterus is prevented by old adhesions or irremovable pressure of surrounding organs; never use it where the flexion of the uterus cannot be easily corrected by the sound or other instrument previously passed into the cavity. Avoid it where there has been any history of previous peritonitis, parametritis, or pelvic inflammation of any sort; or where any induration of tissue can be detected; or where there could be the faintest suspicion of malignant degeneration; or where there is any symptom of acute parenchymatous metritis; or where its introduction gives rise to any violent or persistent pain. Keep the patient absolutely quiet for twenty-four hours, and watch from time to time until the tolerance is fully established. Use hot-water injections daily during its use, and remove it on the least evidence of its having a pernicious effect.

With these restrictions, I regard the intra-uterine stem as a safe and reliable instrument.

A THERAPEUTIC NOTE—TARTRATE OF MORPHIA.—The new preparation of neutral tartrate of morphia is a useful adjunct to our therapeutics. Being very soluble, it passes quickly out of the system, and gives less of the unpleasant after-effects than either the muriate or the acetate. Its great solubility makes it particularly advantageous for subcutaneous injection. It gives little smarting or irritation when thus administered, and the solution never clogs the finest needles.

AN ANALYSIS OF THE SYMPTOM-ETIOLOGY AND THERAPEUTICS OF SOME CASES OF MITRAL OBSTRUCTION.

BY EDWARD T. BRUEN, M.D.,

Physician to the Philadelphia Hospital, Demonstrator of Clinical Medicine in the University, Lecturer on Pathology in Woman's Medical College, etc.

SO much has been written concerning the diseases of the heart that as often as a new article appears there is a strong disposition to challenge the *raison d'être* of the communication. Much of what I propose to say has been offered before to medical readers. My object will be to bespeak renewed attention to the symptoms I have collated, and to bestow especial notice upon a few of the incidents in the development of disease of the auricular surface of the mitral valve.

To avoid tedious repetition, I will epitomize the histories of my cases by relating a single one, the most typical, embracing the various physical signs and pathological lesions of my subject, and then make my comments. I would, however, have it understood that a study of six cases forms the basis of this paper, and that each in greater or less degree illustrated the features which I have determined by careful study to be the ordinary accompaniments of the lesion.

A. C., æt. 24, was delivered in 1874 of a child. Previous to this time she had enjoyed exceptionally good health, save only that as a child she was occasionally short of breath, and subject to fits of oppression and cyanosis, but which also were attended with sufficient physical disturbance to indicate to her friends that she was of a very hysterical temperament. In November, 1878, I saw her first, at which time she was the victim of secondary syphilis. She was very anæmic, and reduced in general health. The chief interest in her case centred in the examination of her circulatory system. The outline of the ventricles to the left of the sternum corresponded in the main with the outline of health, save that the apex-beat was deflected to a point, beneath the left nipple, about three inches from the median line. The right ventricle was enlarged, reaching a point an inch beyond the right of the median line of the sternum. The aorta was examined by percussion, and found to be about normal in size; but to the left, between the third and fourth ribs, a convex prominence of the bony chest-wall could be recognized. This extended from a point an inch to left of main sternum, about two inches on level of second interspace, and about two and three-quarter inches on level of third interspace. It was over this prominence a pulsation could

be felt, together with a thrill which attended the pulsation. The pulsation occurred at the end of the long-pause interval of the cardiac revolution, immediately preceding the systole of the ventricles. The thrill could *not* be felt at the apex or over the aortic region.

Auscultation evidenced a systolic murmur, very hoarse and high pitched, audible everywhere over the usual distribution of aortic murmurs, even to the bifurcation of the aorta into the iliacs, though it was fainter in the arteries of the neck and at the ensiform cartilage than common.

I argued that this murmur simply evidenced an aortic roughening without obstruction, because the alterations in the ventricular wall, either of hypertrophy or of dilatation, were so slight.

The systolic aortic murmur was well heard at the apex and at the sides of the chest. It was recognized at the bifurcation of the iliacs and elsewhere by a due appreciation of the pitch of the murmur. I have been thus tediously explicit to pave the way for my next statement, that at the situation of the bulging another murmur equally loud or louder than the aortic could be heard, but yet the two murmurs were not synchronous. Auscultation elsewhere established this point as the position of maximum intensity of this new murmur. It was manifest thus far that two murmurs were to be considered, and that while one was distinctly with the systole (*viz.*, the aortic), the other was not synchronous with it, an appreciable interval existing. Studying further, I discovered that the valvular element of the first sound appeared to be intensified at the apex; that the second sound above the base, belonging to the pulmonary artery, was intensified. Together these sounds produced a flap comparable to the flapping of a flag or sail. It was also a notable fact that the lower-pitched murmur, propagated as it was so loudly upward, appeared not to be distinctly transmitted, but was soon lost in the roar of the aortic sound. The murmur being accompanied by an anæmia which was profound, as in syphilis is common, a suspicion of its explanation as a functional murmur dawned on me. But I dismissed this when, six months afterwards, treatment had removed the anæmia, but the murmur remained. It was at this time that the correspondence between this murmur and the presystolic murmur presented itself. The train of reasoning ran as follows:

1st, What is this tumor? Not aneurism, since from inquiry from the physician who attended her in 1875 aneurism was suspected on account of physical signs similar to those now recognized. But if so the aneurism would have become larger in five years' time. Moreover, the position of the tumor is not that of aortic aneurism, being too much to the left, with an interval of resonance between the left edge of the sternum

and the tumor. She has occasional dropsical attacks, and still suffers from cyanosis and the "spells" which afflicted her childhood. Moreover, the pulse is always very small; and although the circulation is adequately carried on while she rests, yet evidently the venous system is more or less permanently over-filled, and compensation is just sufficient to carry on the circulation.

This has led me to my first point, viz., that the tumor is the left auricle, and that in mitral obstruction there is always more enlargement of the auricle than in mitral regurgitation, in which case dilatation predominates, just as in corresponding cases of aortic obstruction the ventricle hypertrophies to overcome the resistance; and I assert that hypertrophy, and therefore compensation, is persistent in the young for many years unless the stenosis is too great, when early dilatation can of course occur. It is to be noticed just here that so large a proportion of recorded cases occur in the young, when nutritive changes are active and hypertrophy may be persistent. A greater degree of enlargement of the auricle, then, is met with in cases of mitral obstruction than regurgitation, and only in cases of extreme obstruction do we meet the cyanosis so commonly described in mitral regurgitation. This point I have verified by a number of autopsies,—four cases out of the six on which this paper is based. To cite one case.

Before death a similarly situated but larger tumor, caused by protruding chest-walls; the cardiac dullness extended six inches to left of sternum, in line of seventh rib, five and three-quarter inches on line of sixth rib, four and three-quarter inches on line of fourth rib. It was thought before the autopsy that this tumor was the left ventricle, and a dilated hypertrophy of the heart was diagnosed weighing forty-five to fifty ounces. On autopsy the heart weighed about twenty-five ounces; the ventricle was hypertrophied and dilated; but the chief lesion was the astonishing enlargement of the left ventricle, which would admit two good-sized Sicily oranges into its cavity. The increased area of cardiac dullness was due to the displacement of the ventricle by the immense auricle distended with blood; the bulging of the chest was due to the same cause; but, the walls of the ventricle being thinned and dilated, the weight of the heart was not increased.

2. A further auxiliary symptom is that

enlargement of the right side of the heart was present in all my cases. This enlargement of the right heart is more constantly present than in mitral disease; and not only so, but in the histories of my cases, unless the obstruction was extreme, hypertrophy of the ventricle and auricle appeared sufficient for the requirements of the circulation. More than this, compensation lasts longer than in mitral disease. While this is true, transitory attacks of dyspnoea, with temporary embarrassment of the circulation, are more frequent than in mitral regurgitation, and bronchitis of asthmatic type is a frequent concomitant. The associated dyspnoea becomes more severe so soon as the compensative power is exceeded, because the lesion is *de facto* more grave and the pulmonary capillaries are habitually overcharged with blood, so that slight increase in pulmonary blood-pressure produces serious effects. The pulse-wave is small in cases of mitral obstruction. This incident is understood when we reflect that there is not so much hypertrophy of the left ventricle as in cases of mitral regurgitation.

3. The third auxiliary symptom is one to which no little importance must be attached, viz., an accentuation of the pulmonary second sound. It is obvious that this is a symptom of the increased pulmonary blood-pressure, and a comparison with the pulmonary second sound in cases of mitral regurgitation leaves no doubt of its accuracy. The first sound may also become so valvular that it could easily be confounded with the second sound were it not that we are guided by the ventricular impulse. This is partly explained by realizing that the blood-pressure in the right ventricle is increased *pari passu* with the elevation of the blood-pressure in the pulmonary circulation, so the tricuspid valves close with an intensified sound, audible over both ventricles; or it may be that, if obstruction is great, only a portion of the blood reaches the ventricle at the time of systole. Thus it comes to pass that we must subtract from the first sound in part the blood element and a portion of the muscular element, leaving either a valve-sound, as heard in typhoid fever, or a dull, blurred sound, as the valves may be much more thickened than roughened; and though not prevented from approximating effectually, yet they close—lifted, as it were, into their place—without producing

a sudden clack. In any case, however, the fact remains, that the sound is better heard than in health. Reduplication of the sounds has existed as a concomitant in certain cases, but cannot be in any sense regarded as diagnostic; but if it occur, a ready explanation is offered by the fact that the overfull condition of the right ventricle leads it to contract in self-defence prior to the left ventricular systole.

Cases of obstruction have been reported without murmur. I have not seen such cases myself.

4. I regard the *position of maximum intensity of murmur* as a most important diagnostic symptom, and I differ here from other authorities. The position of maximum intensity in my cases was over the tumor caused by the distended auricle, following in this respect the rule that all murmurs are best heard over that portion of the chest-surface at which the cavity in which the murmur is generated approaches nearest the surface.

It is true it may be well heard at the apex, following in this respect the rule that murmurs are propagated in the direction of the blood-current, but they are especially loud over the auricle, so much so as to make me regard it as a diagnostic sign.

Exceptional presystolic murmurs have been reported as audible posteriorly, as those reported by Dr. Andrews, St. Bartholomew's Hospital Reports, 1877; but in these cases there was consolidation of the lungs, or the murmur may have been unusually loud.

If a systolic aortic murmur is present, it may be heard in the axillæ, and, unless precaution is taken, the presystolic murmur may also be mistaken for a mitral systolic murmur transmitted to the axillæ.

The auxiliary signs to which I have referred develop in proportion to the amount of obstruction of the mitral valve. The murmurs in my experience have often been rough and loud when the auricular surface of the valve has been roughened by calcareous deposit but no true obstruction existed: the intensity of a murmur must then be dismissed as a factor in the prognosis. A case of this sort I saw in the practice of Dr. Keating: there was a loud presystolic murmur, together with anasarca, ascites, œdema of the lungs, etc., in a child nine years of age. The condition of the child appeared desperate. But some eight months afterwards Dr. Keating asked me

to see the child again, as he said the murmur had disappeared,—which was the case, the child enjoying excellent health, all symptoms of cardiac disease having vanished under appropriate treatment. In this case the auxiliary signs I have described were not present.

Dr. Sansom and others assert that thrill is invariably associated with mitral obstruction; but I have not found this the case any oftener than associated with other diseases of the valves, *e.g.*, the aortic.

The failure to detect presystolic murmur arises often from an imperfect comprehension of the physiology of its production. It occurs during the long pause after the second sound. During the first part of this period, in health, the blood is passing passively into the ventricles from the right and left auricles. Just before the first sound comes the auricular systole, and this it is which expresses all the blood from the auricles and fills the ventricles. It is now that a murmur, called presystolic, or auriculo-systolic, or post-diastolic, is developed, and immediately afterwards the first sound occurs. If the obstruction is extreme or the roughness very pronounced, a murmur may occupy the entire period of the long pause, and so become confused with a diastolic murmur; but this is not the rule. The clinical observation of this form of heart-disease is fraught with special interest. I will allude to but one of its features. Patients are, as I have said, apt to suffer from a dyspnoea which is more or less transient, associated with asthmatic symptoms in many cases and bronchitis. This occurs because the lungs are at all times in the history of the case really overfilled with blood, but owing to the perfect compensation the habitual symptoms of this condition are not present, and yet if from slight causes the vaso-motor tonus of the arterial and venous systems is increased the aëration of the blood is lessened, and there is brought about the asthmatic attack or the dyspnoea. This is not the case in mitral regurgitation, because in this form of cardiac disease the circulation accommodates itself to the gradually increased blood-pressure, and dropsies are the consequence, but in mitral obstruction the increased tension is sudden. The means by which this increased tension may be brought about are various, and their pathology has been accorded a due importance save in one case. The palpitations and increased blood-pressure

can be determined by various causes, chiefly influencing the nervous system; for example, the excitements of business, the influence of a quarrel, or other physical disturbances. Functional digestive disorders may likewise have an important share in determining the dyspnoea. To understand this fact, we must recall that nitrogenous food is taken to the liver and there broken up from the form of peptones into glycogen and the products of the urea series. The excess beyond the purposes of nutrition, then, cannot be excreted by the kidneys as rapidly as they are supplied by the liver, and in the blood-vessel system these materials act as irritants, producing a recognizable increase in the blood-pressure. To the support of the fact that such an influence can be exerted, I refer to the experiments of Dr. Parkes (*London Lancet*, May 16 and 23) upon some soldiers in Netley barracks. He found that if nitrogenous food was withdrawn from their diet the arterial pressure was materially reduced, and it became elevated just in proportion to the increase of those articles of food containing nitrogenous substances. Imagine, now, a dyspeptic individual with mitral obstruction, especially of plethoric habit, after indulgence of the table suddenly seized with palpitations or with dyspnoea. Congestion of the lungs is followed by bronchitis and, perhaps, hæmoptysis. Imagine how at first these attacks are overcome; how at last the heart becomes dilated, emphysema may ensue, and the attack may one day prove fatal. Let us conceive that, added to this condition, we have deficient functional activity of the kidneys: if they are unable to eliminate the nitrogenous materials, fuel is added to the fire. This, then, is the explanation of the temporary dyspnoea which so often puzzles the observer, as no condition of the pulmonary parenchyma seems to warrant the grave symptoms. The same explanation has been assigned by Drs. Allbutt and Johnson* to the transient dyspnoea attending cases of nephritis where there is no dropsy to account for the same, and it has been termed by them uræmic asthma. I have confirmed these views by my clinical experience, and in both mitral obstruction and renal asthma the condition is recognizable by the fact that, with the symptoms of asthma, on auscultation the air enters

and leaves the lungs unobstructed by spasm of the bronchial tube, but the blood is prevented from reaching the air by the contraction of the pulmonary arterioles, and so becomes deficiently aerated. If the condition persists for some time, cedema of the lungs will occur, as in mitral regurgitation; but this is not the rule. In addition to these fits of asthma we sometimes find a series of slighter attacks lasting for days, as merely shortness of breath and venous obstruction; similar attacks I have seen in interstitial nephritis, in which disease long-continued, slowly-increasing vaso-motor tonus is the rule. But ordinarily patients do well, the lesion being usually as fully compensated for as are aortic lesions. We do not have the dropsies and striking phenomena of mitral regurgitation till late in the history of a case. The prognosis must be based mainly upon an accurate estimate of the compensative hypertrophy, and much care must be given to avoid misinterpreting intercurrent maladies which may temporarily influence the circulation.

In this paper I have said but little in regard to the nature of presystolic murmur, in relation to its timbre, etc., although I am aware that the literature of the subject is full of details of this sort. I have insisted chiefly on the position of the maximum intensity of the murmur when one can be heard. I think that in grasping the clinical history and treatment of cardiac diseases we should give special study to the changes which occur in the heart-muscle as the effect of a lesion, rather than spend our attention on the varying character of the sounds. After diagnosing the murmur, let the observer appraise the damage sustained by the heart. He must recur to the auxiliary symptoms such as I have indicated, and appeal to the clinical history of the case to sustain his judgment.

It is the object of treatment to prevent retrograde metamorphosis in the cardiac muscle. If my views of the importance of varying states of vaso-motor tonus are correct, then hygiene should claim an important share of our attention.

The secretion of the skin, which is supplemental to the kidney in its depurative office, must be accorded much importance. When dyspnoea commences, I think great benefit will accrue from the use of jaborandi, which has the property of stimulating the secretion of the sweat-glands, and

* British Medical Journal, September, 1877; also Lumleian Lectures, 1877.

thus will aid materially in the elimination of urea and kindred substances.*

Recognizing the danger of permitting the dyspnœa to increase, I would use the *jaborandi* every other day, or twice a week, according to circumstances, and in intervals of health preserve in every way the secretion of the skin.† To this end suitable clothing must be advocated, as most important. The kidneys and bowels must be made to act their parts well; the use of the natural waters containing potassium and sodium is most advantageous, as they eliminate most surely the deleterious retained solids.

In Dr. Fothergill's "Therapeutics" he says that a combination of potassio-tartrate of soda and sulphate of magnesia, in the infusion of buchu, can only be duly estimated by those who have tried it. If the oppression is severe, I would recommend elaterium. I use this drug even in advanced cases of cardiac degeneration, and do not fear the depression attending its operation, as I always employ milk punch during its cathartic action. It prepares the way most efficiently for diuretics, such as those which I have mentioned.

The management of cases requires a suitable care that an excess of nitrogenous food is not supplied; the amount required for the preservation of the tissues is small, and in serious cases much benefit will accrue from the temporary relegation of the diet to milk. Especially is this important in cases in which, together with the heart disease, the kidneys are involved. To the milk diet may be added such farinaceous substances as are most agreeable to the appetite, and occasionally animal food. I think I have observed much benefit from this method of treatment, but in many cases of dyspnœa asthmatic symptoms may become so urgent that resort must be had to those remedies which influence the circulation. Digitalis is at times most efficient, but in a large proportion of cases, probably one-half, I have been disappointed in it. This failure is because the circumstances demand a lengthened diastole even more than an increased systole.

* For some interesting views substantiating the effect of the deficient action of the skin as a means of materially increasing blood-pressure, consult a paper by Dr. Semmola, of Italy, read before the International Congress at Amsterdam, a résumé of which is published in the *British Medical Journal*, September, 1879; also *Gazette Médicale de Paris*, 1875.

† The preparation of fluid extract of *jaborandi* made by Mr. T. G. Lightcapp, Falls of Schuylkill, is especially prompt and reliable in its effects.

I have seen my patients' livid and yet the systoles really efficient. The truth is that digitalis always increases systole, but sometimes it fails to slow the heart and lengthen diastole. On the other hand, care must be taken not to slow the heart's action too rapidly; otherwise the increased vaso-motor tension produced by digitalis becomes injurious,—at least I have seen dyspnœa persist. Digitalis is not a remedy in my experience for long-continued use in any case: it is an excellent whip, but an inferior drug if used too long; nevertheless it is more frequently of use than most of the cardiac stimulants. Recognizing the necessity for prolonged diastole to relieve pulmonary congestion, and our occasional powerlessness to aid by digitalis, I wish, however, to advocate cupping, or even moderate bleeding; in these means we have a real resource, which is indicated by nature in the epistaxis which is so salutary. I remember a patient who frequently endeavored to produce "nose-bleed" with benefit.

Morphia, bromide of potassium, chloral, and belladonna all have their value as remedies for the dyspnœa or asthma; and in this class ether, combined with ammonia, must be included, as very frequently of service.

It has been proved by Küssmaul and Tenner that when the carotids were compressed in man the face became pale, pupils first contracted, then dilated, respiration slow, with giddiness, staggering, and the men would have fallen if they had not been supported, and in some cases vomiting and convulsions appeared. If in animals the circulation is cut off from the medullæ, then convulsions will occur, but not if chloroform or ether be previously administered. Now, if the pathology of the dyspnœa, etc., which I have stated is correct, the above-named agents, which produce their effects by acting upon the central nervous substance or obtunding the sensibility of the terminal vaso-motor nerves or the muscles in the arterioles (nitrate of amyl and belladonna), are suitable agents with which to cope with a disease arising from an excited nerve-influence.

In point of fact, I have discovered that morphia given hypodermically will relieve dyspnœa where digitalis has failed. It operates best if given in this way, as it is more quickly active than if given by the mouth. Associated with this measure I

use a combination of forty minims of Hoffman's anodyne and five grains of carbonate of ammonium. Bromide of potassium is a good remedy, but does not act quickly enough. Of nitrite of amyl my experience is favorable, but in renal asthma Dr. Allbutt rejects this remedy as useless. Dr. Johnson says it is frequently useful. Neither of them mentions its use in cases of cardiac dyspnea, where the same pathology must, I think, prevail. We all understand that the presence of non-aërated blood raises first the arterial and secondly the venous pressure, owing to the spasmodic closure of the blood-vessels. Why is not the question oftener dealt with in the treatment of cardiac dyspnea?

I conjoin, then, the use of these agents, combined with stimulants if required, and oftener relieve symptoms than when using digitalis.

These cardiac and vascular depressants must be sedulously avoided (with the exception of morphia, which is nearly always useful) when cardiac dilatation with fatty degeneration has advanced. I think jaborandi should be included as also dangerous in this stage, depressing the heart or pneumogastrics. I have seen fatal syncope follow its use; and I always carefully watch my patients while they use this remedy.

In the intervals of ease, when no cardiac symptoms call for treatment, it is possible, that vaso-motor and digestive stimulants may be required, such as strychnia, zinc, or arsenic. I would recommend the valerianate of zinc in half-grain doses as a prophylactic agent against the waves of nervous excitement, which lead to dyspnea.

HYGIENIC AND THERAPEUTIC RELATIONS OF HOUSE-PLANTS.

BY J. M. ANDERS, M.D., PH.D.

Read before the Alumni of the Auxillary Department of Medicine, University of Pennsylvania, February 6, 1880.

THE old question of the effects of living plants on the air of houses is one of considerable interest. The family doctor is oftentimes confronted with the query, "How do plants in rooms affect the health of the inmates?" Formerly, it was the universal opinion that they were injurious to health, particularly in the sleeping-room and sick-chamber. Unfortunately, this still continues to be a popular impression. To

review the various views on this topic down to the present would be foreign to the scope of this article and quite out of place. The discussion will necessarily be confined to the present state of our knowledge concerning the subject, and especially such of its bearings as are interesting from a medical point of view.

Three of the chief functions in plant life are the absorption of carbonic acid, the exhalation of oxygen, and the generation of ozone. Now, it has been conclusively shown* that variations in the amount of these gases from the presence of any number of plants have no appreciable effect on the air of an apartment, the absorption and exhalation of these substances being carried on too slowly either to improve or to vitiate the air.

There is, however, yet another process in plants, which in this connection is of far greater importance, viz., that of *transpiration*. By this term is meant the exhalation of moisture by the leaves. About this function very little was known until recently. Careful investigations of the subject have been made by the writer, to which brief reference only can be made here, for they have formed the basis of a paper elsewhere.† It may suffice to say that the average rate of transpiration for plants having soft, thin leaves, as the geranium, lantana, etc., is one and a half ounces (by weight) of watery vapor per square foot of leaf-surface for twelve diurnal hours of clear weather. In order to convey some notion of the great activity of this function, it might be stated that at the above rate the Washington elm, at Cambridge, Massachusetts, with its two hundred thousand square feet of leaf-surface, would give off seven and three-quarter tons of water in twelve hours. In the twenty-four hours an indoor plant will transpire more than half as much as one in the open air. It would appear to follow naturally from these facts that growing plants would be capable of raising the proportion of aqueous vapor of the air of closed apartments. And this suggestion prompted the writer to make observations with the view of establishing this fact experimentally. By means of the hydrometer, the atmosphere of two rooms at the Episcopal Hospital, in which the conditions and dimensions were in every respect similar, were tested simultaneously,

* Pettenkofer, Pop. Science Monthly for February, 1878.

† See American Naturalist for March, 1879.

in order to note the variations produced by growing plants. In the window of one of the rooms were situated five thrifty plants, the other contained none.

For eighteen consecutive days the dew-point of the room containing plants gave an average complement one and a half degrees lower than the room in which there were no plants. Thinking that possibly this difference of humidity might not be owing solely to the presence of plants, the conditions were varied, and further observations made, with similar results. The manner in which these investigations were carried out cannot be here detailed. The following conclusion should, however, be quoted: "During the summer months, when the windows are thrown widely open and the doors kept ajar, the influence of transpiration is quite inconsiderable; on the other hand, when the interchange of air is not too rapid, a sufficient number of plants, well watered, have the effect (if the air be not already saturated) of increasing the amount of moisture to a considerable extent."* This point, as will be presently seen, is of special importance where houses are heated by dry-air furnaces.

Although science cannot readily determine the exact relative humidity most conducive to health, still, according to the best authorities on the subject, it is considered that about seven-eighths of what the air will contain at a given temperature is the proper standard. By repeated testing the writer has recently found that the degree of humidity is generally below that standard in this latitude. It was also found that air warmed by an open fireplace, or by air heated by steam, gave a complement of the dew-point from two to four degrees Fahrenheit greater than the external air, and in the case of rooms heated by a dry-air furnace the complement was from five to seven degrees greater at the same temperature. From this exhibit it will be seen that the atmosphere of a room warmed by dry air contains far too little moisture to be healthful. The peculiar effects of dry air on human beings are well known to the progressive practitioner. With respect to this question Prof. A. Stillé observes, "... A great demand is made upon the system to supply the air with moisture; the skin and pulmonary mucous membrane are dried, and a condition is

induced which is expressed in irritability of the nervous system, paleness and susceptibility of the skin to cold, liability to pulmonary diseases, and, in a word, deterioration of all the functions."†

It is true that in special states of the system—*e.g.*, in chronic rheumatism—dry heat is beneficial; but this is no argument against the benefit ordinarily derived from a proper amount of moisture in the atmosphere. On the other hand, if the presence of a certain number of thrifty plants in an occupied room warmed by dry air would have the effect of raising the relative humidity to the extent indicated, it is clear that we possess in them one of the readiest means of obviating these evil consequences. In all instances, then, in which artificial heat is used, but particularly in the case of dry air, as that furnished by furnaces, plants become, under proper regulations, hygienic agents of special value.

Were this article intended for popular reading, much might also be said in favor of keeping house-plants for the benefit they confer in delighting our senses and ministering to our æsthetic tastes; but we are discussing the question from a strictly medical point of view, and such matter would be somewhat irrelevant.

Since it is well established that certain maladies are benefited by a moderately moist and warm atmosphere, and since plants can, as has been shown, furnish this moisture to the warm air of rooms, they might with propriety be classed as *therapeutic* agents; but to draw lines of distinction between their hygienic and their therapeutic application would be an unnecessary refinement of terms.

Of course it is chiefly in diseases of a chronic nature, and particularly those affecting the lungs and air-passages, that we should expect to derive good results from such a measure as stocking the sick-room with growing plants, for it is in such cases that dry heat does the most harm. Still, they would prove beneficial also, in a less degree, in acute diseases, especially the continued fevers, and, perhaps, membranous croup, where moisture in the air is so desirable. House-plants have, however, a sphere of usefulness which is independent of atmospheric humidity. In nervous disorders of the functional class, such as melancholia and chlorosis, in diseases of

* "Beneficial Influence of Plants," *American Naturalist*, December, 1879.

† *Therapeutics*, vol. i. pp. 637, 638.

the mind proper, and in other allied conditions (excessive grief, ennui, etc.), where it is necessary to divert the mind or relieve tension, nothing is more efficient than the pleasing occupation of studying and caring for plants.

But it is in that sweeping disease phthisis that plants offer the best hope of success as therapeutic agents. The importance of this point demands that it should receive careful attention.

Deeming it necessary that the experimental data should receive supporting evidence of an unequivocal character before the efficacy of plants in the treatment of this disease would be firmly established, the writer opened a correspondence with some prominent practitioners, besides making inquiries of those with whom he came in contact, soliciting a brief statement of their observations in regard to the effects of plants on the sick.* The almost unvarying response has been in about the following terms: "I cannot help you, for my attention has never been directed to the points in question." A notable exception is the letter of my friend Dr. Hiram Corson, of Conshohocken, Pennsylvania. This letter I have already published in a previous article, but the great interest of the case described will be ample apology for inserting an extract from it here. He writes, "My mother, her two sisters, and only brother all died of consumption under fifty years of age. All the children of my mother's sisters and brother, though they lived to a good age and enjoyed good health, finally died of consumption. On my father's side there was not a taint of any disease, but great strength and vigor. Three of my brothers, active, energetic men until within a few years of their death, died of consumption at the ages of fifty-five, fifty-seven, and seventy-eight respectively; and a sister died of the same disease at sixty-six. I mention these cases to show that the germs of the disease were with the family. Thirty years ago my eldest sister, then above fifty years of age, was reported by her physician, Dr. J. P., a victim of tubercular consumption, to which disease she would succumb before the coming summer. She was a

lover of plants and flowers, and cultivated them in-doors and out. The spring saw her again moving among her plants, and the winter found her confined to the house, and sometimes for weeks to her bed-chamber, which, like the sitting-room, was literally a green-house. Visitors and friends often spoke to her of the impropriety of having so many growing plants in her room, reminding her of the tradition that they were injurious. Still, every spring found her again on her feet, in the yard and garden, nursing her plants, and every winter confined to her room. And thus she lived, year after year, until two years ago, when, at the age of eighty-five, she passed away. I have seen a few others have plants growing and blooming in their chambers, but never one who so lived among them as did my sister. Winter after winter we looked for her death, the cough, expectoration, and weakness justifying our apprehensions, and yet her eighty-fifth year found her cheerful and happy, living among her plants and enjoying the society of her friends. May we not believe that the vast exhalation from these plants—water purified and medicated by their vital chemistry—prolonged her life?"

Finding that most of my correspondence yielded but barren results, I determined to avail myself of non-professional experience; and, accordingly, I began visiting the gardeners and florists of Philadelphia, requesting answers to a list of questions bearing on this subject. Only a brief summary of the results obtained can be here given. Thirty florists have already been visited in this way.

Twenty of these, with ages ranging from twenty-five to eighty years, are strong and vigorous, and have always enjoyed good health. They all work from ten to sixteen hours daily, and have followed this pursuit for periods ranging from six to sixty years.†

Of the remaining number, four are occasionally attacked with rheumatism of mild type, ascribing their symptoms, and doubtless justly, to wettings, the result of carelessness while watering the plants, or from contact with the wet leaves.

One of the gardeners, a boy, aged fourteen, has been at this occupation for a year, working steadily ten hours daily. Prior to taking up his present employment he had

* The writer would still be grateful for any interesting information upon this subject, for without aid it would be almost impossible either to establish the position taken or to correct temporary conclusions, and he wishes to make a further study of the subject. Address 1638 North Eighth Street, Philadelphia.

† The histories of three of these subjects have been furnished through the kindness of Professor J. T. Rothrock, to whom my wants had been made known.

been working at the drug business for a year. While thus engaged his health failed considerably, and he became pale and emaciated. He had never been strong previously, though not to say diseased. No sooner had he adopted his present avocation than he began to improve in vigor, and now he is the picture of robust health.

Another florist, aged thirty-one, says that prior to going into the business he had "weak eyes," but that as soon as he became a florist, eight years ago, his eyes began to improve, and in a few years entirely recovered.

Still another of the remaining ones has been subject to severe colds since he has been working among plants, but he admits that he has been exceedingly indiscreet about clothing, etc., in going from the hot-house to the outer air.

Mr. W., aged thirty-five, has been in the business for twenty years, and is among his plants at least ten hours daily. Phthisis is hereditary in his father's family, and my informant himself (Mr. W.) has long since been pronounced a consumptive by his physician. He states, however, that he has always had good health, except simply the annoyance of a slight cough and a little expectoration occasionally. He is still nursing his plants and enjoying life.

This gentleman kindly related to me a brief history of his deceased brother, and also that of their father, likewise deceased; and, for the sake of convenience, I have classed them among those whose histories I obtained directly.

The brother died at the age of thirty-six years. He was engaged in gardening from boyhood up to within a year of his death,—continually at work among his plants. During all the time he followed this vocation he enjoyed fair health. A short time prior to his death he forsook his calling and took a store in the same city, and almost simultaneously he became a victim to consumption, which caused his death in a short time.

The father of these two patients, although he was predisposed to phthisis, followed the occupation of florist from early life to the age of sixty, and during all those years was in good health. When about sixty years of age, while he was assisting at the erection of a church, he met with an accident which injured his ribs (so the son says) and disabled him for work. But a few months later he went

into consumption, which quickly proved fatal.

Now, may not the fact that he was unable to be among his plants have had something to do with the causation of his last illness?

From the above cases it will be seen that what we had deduced from experimental results concerning the health-giving effects of plants (which is owing to transpiration increasing the humidity of the air,—the plants acting as natural and perfect "atomizers") is entirely in harmony with what is observed concerning the effect of sufficiently moist warm air in many cases of phthisis; and if it is true, as we have attempted to demonstrate, that house-plant hygiene constitutes a valuable preventive measure where there is hereditary tendency to certain diseases, then it ought to be definitely and thoroughly understood, and it is of vital importance that it should be adopted in cases where there is a known predisposition to phthisis, for half of the cases are supposed to be preventable, whereas if the disease be allowed to develop, complete recovery is not to be expected. Furthermore, though the keeping of plants does not "cure" confirmed cases of phthisis, it is nevertheless very useful to prolong life, and by ameliorating the distressing symptoms renders existence at least endurable,—an office not to be despised in such a wide-spread and lingering disease.

Observation teaches that advanced cases of phthisis (as, for instance, where cavities exist) are benefited by a more decidedly moist atmosphere than is required in health, and hence they will require a much greater profusion of plants in the room than those who have the disease in a more incipient stage.

The plants should be well selected and kept in a thriving condition. The chief points to be borne in mind in the selection of the plants are, first, that they have soft, thin leaves; secondly, foliage-plants or those having extensive leaf-surface are to be preferred; thirdly, those which are highly scented (as the tuberose, etc.) should be avoided, because they often give rise to headache and other unpleasant symptoms.

In order to facilitate a practical application of the data gained by experiment, the following formula has been carefully prepared: Given a room twenty feet long, twelve feet wide, and ceiling twelve feet high, warmed by dry air, a dozen thrifty plants with soft, thin leaves and a leaf-

surface of six square feet each would, if well watered, and so situated as to receive the direct rays of the sun (preferably the morning sun) for at least several hours, raise the proportion of aqueous vapor to about the health standard.

This formula may serve as a guide in the use of plants for hygienic purposes; but under conditions of actual disease it will be necessary to increase the proportion of plants according to the degree of humidity sought, or as the indications of individual cases may demand.

It should be stated that, to obtain the best results, both the rooms occupied during the day and the sleeping-apartment should contain plants. It was for a long time the opinion of scientific interpreters generally that plants in sleeping-apartments were unwholesome because of their giving off carbonic acid gas at night; but it has been shown by experiment that it would require twenty thrifty plants to produce an amount of the gas equivalent to that exhaled by one baby-sleeper: so this is no valid objection to their admission, and not to be compared with the benefit arising from their presence.

We have no desire to underrate other means of treatment while upholding the importance of our subject. Exercise in the open air is of immense advantage in phthisis, and during the warm season the consumptive should be moving among his garden-plants, and, if he be a lover of flowers, should assume personal charge of them. Again, no one will dispute the value of certain tropical climates for judiciously selected cases of phthisis; but the practice of indiscriminately sending patients to them is certainly to be deprecated.

New health-resorts (many of them comparable only to the patent nostrums) are constantly being pressed upon the public, but too often a trial of them brings only disappointment, and the consumptive is rendered more miserable by the annoyance of travel and the anxiety of being separated from all the endearing relations of home. And even where travel is desirable, it is, for financial or other reasons, quite impossible in a large proportion of cases.

To have always at hand and readily available so complete and withal so agreeable a health-resort at home as that furnished by a room well stocked with plants must prove an inestimable boon to the despairing invalid.

SYSTEMIC POISONING BY THE EXTERNAL APPLICATION OF CARBOLIC ACID.

BY COMEGYS PAUL, A.M., M.D.

AS poisoning by carbolic acid has of late elicited considerable interest in the profession, perhaps it will not be inappropriate to relate the following case:

A young convict, about 24 years old, complained of the excessive discomfort caused by a crop of herpes upon his right side, extending from the nipple to the axilla. I ordered the part to be painted with a saturated solution of carbolic acid, with the effect of entirely relieving the pain. It was then dressed with vaseline. Two days after, he asked to have the acid again applied. Within twenty minutes after it was done he became faint and dizzy, very weak in the legs, and exhibited all the signs of a general collapse. The condition lasted about half an hour, when I was relieved of considerable solicitude by his gradual revival.

The surface covered by the carbolic acid was not more than five square inches, and the second application came in contact with only a partially denuded cuticle of much smaller extent.

PHILADELPHIA, April 4, 1880.

POISONING BY OIL OF WORM-SEED.

BY I. C. GABLE, M.D.

M. R. N., æt. 63 years, took, in divided doses, during one day, nearly an ounce of wormseed oil (*ol. chenopodii*); on the evening of the same day, after some peculiar symptoms, he fell asleep, and soon passed into a comatose state. I was called to see him at 10 A.M. the next day, when I found him still in a profound coma, perspiring profusely, and exceedingly salivated; respiration 33; pulse 106; pupil somewhat dilated.

I diagnosed wormseed oil poisoning, and gave a very unfavorable prognosis. I saw the patient again at 6 P.M., with symptoms of rapid dissolution, pulse being 143 per minute, and respiration 44 per minute. The patient died at 9 P.M. of the same day. Dr. J. W. Kerr and I held an autopsy, but found no special symptoms in the stomach, though there was considerable smell of the oil about the abdominal viscera.

LOCAL APPLICATION IN NEURALGIA.—Chloral and camphor, of each equal parts, rubbed up in a mortar until a syrupy liquid is formed.

TRANSLATIONS.

TANNATE OF QUININE.—Dr. A. Becker, of Bonn (*Berliner Klin. Wochens.*, 1880, p. 77), alludes to the difficulty experienced in inducing children to take quinine, and says he has asked himself the question whether some compound of cinchona could not be found which would be useful and at the same time not so disagreeable to the taste as the ordinary preparations of quinine. These are bitter in proportion to their solubility in saliva. Of the official preparations which are employed as antipyretics, bisulphate of quinine stands first in point of bitterness; sulphate of quinine comes next; then chloride of quinine; and, last, pure, that is, uncombined, quinine. Professor Binz suggested to Dr. Becker that possibly tannate of quinine might be useful if the bitterness of the remedy were to be avoided. This preparation has been known some years, and was formerly much used where the effect of both constituents was desired in a combined condition. In 1872 a discussion on the use of tannate of quinine took place in the French Académie de Médecine. But this came to nothing. In Becker's opinion the combination of the two medicines is not a happy one for employment in pyrexia, since it is not soluble enough. Nor is it the best preparation when the effects of tannic acid are desired, for there is no object in combining the acid with quinine in such cases. The value of tannate of quinine lies in the fact that, when properly prepared, it is quite free from taste, for it dissolves only very slowly in saliva or water. It might be thought that this quality of insolubility would militate against the usefulness of the drug, unless it could be proved that it is more soluble in the fluids of the intestinal canal. In order to settle this question, Becker took upon an almost empty stomach a decigramme (1.6 gr.) of tannate of quinine, with a little water, and drank immediately afterwards a wineglassful of madeira or six drachms of cognac. Within fifteen minutes quinine appeared in the urine. The same amount of the drug, followed by lighter wine, did not produce a similar effect. Becker attributes the difference to the different stimulating effect of the wines, and not to solution of the drug in alcohol. The presence of hydrochloric acid aids in the solution of the tannate of quinine. It appears, then, from

Becker's experiments, that this salt is taken up into the circulation, although somewhat slowly. Having made use of it in malarial fever, bronchitis, trigeminal neuralgia, and in a large number of cases of whooping-cough, Becker recommends its further use very warmly. As experience teaches that the best medicines often fall into discredit because they are poorly made or adulterated, the following points should be attended to. 1. The tannate of quinine must be made with pure quinine, and must contain no less active ingredients. 2. On account of the relatively small proportion of base, the dose must be one-half larger than that of the crystallized salts ordinarily used. 3. The absorption of the preparation should be aided by every means: it is well, therefore, to administer wine simultaneously. 4. When the patient can conveniently take the ordinary quinine salts, these are to be preferred to the tannate.

THE SIMULTANEOUS EMPLOYMENT OF CALOMEL AND IODIDE OF POTASSIUM IN DISEASES OF THE EYE.—W. Schlaefke (*Arch. f. Ophthalm.*, xxv. 2, s. 251; *Cbl. f. Med.*, 1880, p. 86) gives the following conclusions. 1. During the use of iodide of potassium in any given case, calomel applied to the eye arouses severe inflammation,—a fact formerly known, but forgotten. 2. Iodide of potassium taken inwardly is rapidly taken up by the organism, appearing in a very short time in the various secretions and excretions, and showing itself in the tears within a few minutes. 3. Given in the dose of six grains twice daily, the iodide is continually present in the tears in notable quantity. 4. While calomel is very slightly soluble in water, it is ten times as much so in a three-quarter per cent. solution of chloride of sodium. 5. Strewn on the conjunctiva, calomel is readily dissolved, and exercises a chemical effect. 6. When this occurs during the administration of iodide of potassium, iodide and ioduret of mercury are found in the tears, and these substances, which are caustic in their action, quickly set up inflammation. For this reason calomel is not to be used locally during the administration of iodide of potassium.

INOCULATED TUBERCULOSIS.—F. A. Rheinstadtler (*Cbl. f. Med.*, 1880, p. 85; from *Archiv. f. Exp. Path.*, etc.) cultivated tuberculous matter in Bergmann's solution and injected the resulting fluid

into the trachea and lungs of dogs and rabbits. In other cases tubercular sputa and small bits of scrofulous glands were introduced into the trachea. Meantime, another animal had meal-broth thrown into the trachea as a control experiment. While in the latter case only inflammatory changes could be found subsequently, the animals injected with tuberculous matter showed in every instance tuberculosis of the lungs, the other organs, especially the liver, being also occasionally the seat of tuberculous infiltration. The tubercles lay in the alveolar parenchyma or in the adventitia of the bronchi and vessels. They were composed of round cells. Occasionally giant cells were also found. In the tubercle-cells minute nuclei could be seen, which Klebs believes to be organisms. The author concludes that tuberculosis is an infectious disease, dependent upon the entrance of certain minute organisms into the system.

SALICYLATE OF SODIUM IN ACUTE RHEUMATISM.—A. Diesterweg (*Deutsche Med. Wochens.*; from *Cbl. f. Med.*, 1880, p. 95) reports 100 additional cases treated with this remedy. Of these, 36 were cut short in 24 hours, 85 in 48 hours, 98 in 72 hours, 1 in 84 hours, and 1 was uninfluenced. The amount of medicine taken was, in 46 cases, 5 to 15 grammes (77 to 221 grains); in 41 cases, 20 to 28 grammes (328 to 352 grains); and in 12 cases, 30 to 40 grammes (462 to 616 grains). In 3 of the cases cut short, purulent joint-trouble followed in the ankle, which was cured by drainage. Relapses occurred during the use of the medicine in 11 cases, 4 of which were in the first week and 4 in the second. Cardiac complications occurred only 5 times (and of these 3 had had cardiac trouble before) in 100 cases, and 20 relapses. Pleuritis occurred 3 times. In 1 of these cases there had been previous pericarditis. In addition, the complications took a favorable course under salicylic treatment in part without fever.

INTERDIGITAL TUMOR.—A woman, who had suffered for six months with a peculiar tumor in the first interdigital fold of the right hand, applied to M. Despres for relief. At first he believed it to be an induration of the skin; but a small black speck upon its surface inclined him to consider it a sebaceous cyst or a transformed wart. Pressure caused the escape of a worm-like body, and further examination showed

that the tumor was a sebaceous cyst with greatly thickened walls and hypertrophy of the skin. The position of this tumor was remarkable: possibly it may have arisen from a small downy hair growing between the fingers and occasioning irritation and the consequent formation of a cyst. M. Despres removed the little tumor without difficulty, and, joining the wound by diachylon-plaster, gained union by first intention.—*Mouvement Méd.*, 1880, p. 74.

ERYSIPELATOUS PNEUMONIA.—J. Strauss (*Cbl. f. Med.*, 1880, p. 110; from *Rev. Mens. de Méd.*) reports the case of a strong man of 26, attacked with facial erysipelas, in whom, on the sixth day, there supervened pain on swallowing, intense redness of the pharynx, tonsils, uvula, and tongue, fever, dry cough, and piercing pain in the side. Pneumonia of the right upper lobe was made out, which soon spread to the rest of the lung, and death ensued. The autopsy showed the larynx normal; the trachea, however, together with the larger right bronchus and its branches, showed an intense scarlet coloration, and there was red and gray hepatization of the right lung. The pneumonic exudation consisted of white blood-corpuscles; there was no trace of fibrinous exudation.

SYMMETRICAL GANGRENE OF THE EXTREMITIES IN THE COURSE OF NEPHRITIS.—M. Debove (*La France Méd.*, 1880, p. 139) reports the case of a woman of 25 who began to notice oedema of the feet and legs during pregnancy, and later, after premature delivery, suffered from convulsive attacks. The physician in attendance ordered ergot, which Dr. Debove thinks may have accumulated in the system on account of the condition of the kidneys. At all events, the first symptoms of gangrene appeared two months later in each of the fingers symmetrically. The patient, who suffered severely from attacks of dyspnoea, in one of which she finally died, complained of nothing but the pain in these fingers.

PODOPHYLLIN.—The following preparation is said to be more regular and certain in its effects than is the drug when given in the pill form:

℞ Podophyllin, gr. iss;

Alcoholis, f ʒi;

Tincturæ zingiberis, gtt. ij.—M.

A teaspoonful in a glass of water every evening on retiring, or every other day, as required.

PHILADELPHIA MEDICAL TIMES.

PHILADELPHIA, MAY 8, 1880.

EDITORIAL.

PRESCRIPTION-WRITING—DRUG-FURNISHING.

THERE are certain indisputable facts in relation to the medical profession of this and many other cities, which, taken together, are rather startling in their suggestiveness. Stated briefly, these facts are as follows. The great bulk of the medical profession must derive their support chiefly from families in which the joint annual income is not over two thousand dollars. The retail druggists do, in the aggregate, an enormous amount of counter-prescribing, —must do it, indeed (whether they desire to or not), in order to hold their custom and make a livelihood. The office-practices of many homœopathic practitioners away from the centre of the city are very large, apparently larger than those of similarly located regular physicians of corresponding standing in the community. The druggist, prescribing over the counter, gives the car-conductor or the mechanic who has contracted a cold in the discharge of his duty, or a gonorrhœa in the search after happiness, a bottle of shrewdly selected medicine, and charges probably fifty or seventy-five cents therefor. The homœopath exacts a dollar, and furnishes the patient with, it may be, a skilfully compounded remedy. The regular physician gives for the dollar a prescription calling, likely enough, for the same remedies as are given by the homœopath, but requiring a further payment of fifty or seventy-five cents to the druggist.

When these facts are placed thus in collocation, do they not suggest the suspicion that at least one source of the success of the abounding homœopathic sharpers is

that people to whom a penny is a penny have found that they get cured about as well for the dollar as for the dollar and a half? For it must not be forgotten that in many cases the successful homœopath is a well-educated doctor who deceives as to his theory and furnishes his own medicine.

The most natural remedy for the evil outshadowed in the preceding paragraph is, of course, the furnishing of medicines by the physician to the patient; but there are many of the profession to whom such action partakes of the nature of quackery. Such a prejudice is, however, really so baseless as to be almost beyond the reach of argument. It may not be wise or expedient for us to furnish our own medicines, but the man who practises fifteen miles from here, in the country, is not a quack because he has a medicine-chest in his buggy, and certainly driving fifteen miles in a buggy does not make what was an honest act at the beginning of the journey a dishonest one at the end of it. The allegation of quackery is absurd. The country physician furnishes medicine because it is expedient for him to do so, and the city doctor long since ceased to dole out pills and powders because it seemed expedient to write prescriptions only. There is no moral question whatever involved in the matter, and it is a grave error to make an ethical one out of it. Will it pay me to furnish medicines?—is the question each doctor ought to be allowed to decide for himself.

Further, because twenty years since it was expedient for the profession to yield up its hold on pharmacy, it does not follow that it is inexpedient now to reconsider such action. Pharmacy is a very different science or art from what it formerly was. A retail drug-store of the present is a "drug-store," and not a "chemist's shop," as it used to be. Granules, sugar-coated pills, capsules, triturations, lozenges, etc., etc., have replaced the decoctions and infusions of our fathers,

and a small case will represent the Pharmacy or Laboratory of the old-time doctor.

The advantages and disadvantages of furnishing medicines are both numerous and apparent. We do not propose to-day to discuss them, but content ourselves with the statement of our belief that to give medicines will "pay," in the largest sense of the term, some physicians, and will decidedly not remunerate others. What we plead for is the fullest liberty to each member of our profession to act according to what he deems his own best interest. What we would stamp out, if we could, is the tyrannical feeling that exists in certain quarters, and which judges the man who uses drugs and not prescription-blanks.

THERE seems to be a real danger that the *Index Medicus* shall fail for want of support. As this would be an ending most disgraceful, as well as most harmful, to the profession, we earnestly appeal to our readers to subscribe to this unique and all-important periodical. In order to determine where the profession is responding with most alacrity, we have taken the trouble to go over the subscription-list, and find that New York takes one hundred and eight, Boston and Philadelphia each forty-seven, copies; while England is satisfied with twenty, France with two, Germany with twenty-four, and Japan with two copies. Our Western cities, judged by this standard, seem to have very little sympathy with high medical culture. Thus, Cincinnati takes only four copies, and Chicago two.

PROCEEDINGS OF SOCIETIES.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

AT a conversational meeting held at the hall of the College of Physicians, Philadelphia, February 25, 1880, the President, Dr. A. H. Smith, called Dr. John H. Packard to the chair while he read a paper "On the Use of the Intra-Uterine Stem-Pessary"

(see page 389), which elicited applause and a vote of thanks from the Society.

DISCUSSION UPON THE INTRA-UTERINE STEM-PESSARY.

In opening the discussion, Dr. W. H. Parish said that one point in the paper that had especially attracted his attention was the frequency of cases which the lecturer encountered where the stem-pessary could be allowed to remain. His own observation had been that very few patients can bear the presence of the stem-pessary without ill consequences. This instrument would seem to be of special use in simple flexion of moderate degree; but such cases are just as well without treatment. The patients that more urgently need relief are those who have metritis or parametritis, and, of course, it is just in such cases that the use of the stem-pessary would be contra-indicated. The particular form of stem-pessary recommended is, perhaps, the best, and one that the speaker himself would prefer to use, and had used, but he had generally found that it caused so much irritation that he was speedily obliged to remove it. He agreed with Lawson Tait in the opinion that there are a very few cases which can be treated in no other way than by the intra-uterine stem-pessary, and to these he would limit its application.

Dr. H. Lenox Hodge said that he had been particularly struck with the care which the lecturer urged to be employed in the use of the stem-pessary. The mere fact that it might do harm under careless management would not constitute a legitimate objection to the use of the instrument; he had no opposition to make to the employment of any agent, provided it is shown that it can be skilfully used with entire safety. But there are other objections to the intra-uterine stem-pessary. In the dissecting-room at the University of Pennsylvania he had endeavored to introduce the instrument in several cases of marked flexion of the uterus after death, and found it to be impossible: he believed that in these patients even the most skilful operator would have failed to introduce it during life. One of the chief objections is that this hard instrument is intended to be allowed to remain in the interior of so delicate an organ as the uterus; indeed, its introduction has been followed by great harm, and even by death. This is allowed even by its advocates. They say that it should be used only in extreme cases; and the speaker was pleased with the caution that the lecturer had impressed upon his hearers when speaking of this point. The recommendation expressed was particularly in regard to flexions; but there is great diversity of opinion among gynecologists as to the methods to be adopted. The opinion of the speaker's father, and of Dr. Emmet and others, is that flexions are not always followed by important results; there

may be even a considerable degree of flexion without much discomfort. The trouble is that there is always present more or less uterine congestion, as was pointed out by the late Dr. H. L. Hodge. Flexion becomes of more importance when complicated with version; but these are just the cases which the lever-pessary is especially designed to meet. Take a case of flexion and retroversion: place the woman in Sims's position; replace the uterus either with the finger or the sound or the finger and the sound; lift the perineum; allow the air to enter and distend the vagina, and the fundus uteri recedes into the abdominal cavity. Now introduce a lever-pessary, and the womb does not again come down. He wished to make this point. As regards flexions, many of us find we can relieve them without the intra-uterine stem: therefore, why use an instrument which may be followed by dangerous results? Again, in retroflexion, why use the stem-pessary, when the condition can be reduced by a simple manoeuvre and prevented from returning by a lever-pessary?

The lecturer had also spoken of the successful treatment of a hypertrophied and flabby uterus by the stem and the daily use of hot-water injections, but the speaker had obtained the same benefit from the hot-water injections without the pessary. As regards amenorrhœa, he believed that constitutional measures will often succeed, and a small flow is not increased by any means at our command. The stem must act as a local agent, and it is this consideration which stimulated Simpson to devise his intra-uterine stem, made up of two metals, as already described. If the courses are scanty in an ordinary case, the speaker would not recommend an intra-uterine stem; but if he finds that the case does not yield to ordinary treatment, he does not hesitate to use it.

Dr. O'Hara said that the instrument evidently was capable of causing considerable irritation, and even worse, and believed that the indications for its use should be very strictly defined.

Dr. MacFerran called attention to the fact that the problem is not simply to reduce a flexion of the uterus, but requires us to search for the cause of the original deviation, and, if still existing, to remove or counteract it. He believed that the tendency was to pay too great attention to the uterus, which in itself is a delicate organ, and to overlook or ignore the original causes of the condition.

Dr. W. H. Taylor said that the incautious introduction of a stem-pessary might produce an abortion; and he inquired whether it might not effectually prevent conception if worn continuously.

Dr. W. R. D. Blackwood had used the intra-uterine stem in two cases of retroflexion, and permanent relief followed. In regard to the fear of producing an abortion, of course the same precautions should be

taken before introducing the stem into the cervix as in the case of the uterine sound; and this objection is disposed of by the fact that the sound is invariably used first.

Dr. Baldwin inquired whether any cases of conception had occurred while wearing the instrument in the practice of the lecturer.

Dr. A. H. Smith replied that he had no personal knowledge of such a case, although two cases of conception occurring during the presence of the intra-uterine stem had been reported to him by Dr. Goodell, one of the cases carrying the child to full term, the pessary having been early removed as soon as pregnancy had been suspected.

He agreed with the gentlemen who had spoken previously, that the intra-uterine stem required caution and should not be indiscriminately employed, the rule being that this expedient should not be adopted when any simpler treatment would answer. Following the same rule, he would not even introduce a vaginal pessary when it was not necessary.

In reply to Dr. Hodge, he said that he made it an invariable rule previously to introduce the sound, in order to measure the depth of the uterus, and where the sound can go the stem may follow. This would dispose of those cases mentioned where it was impossible to introduce the stem after death. He (Dr. Smith) would lay down the rule that the instrument should not be used in any case where the uterine canal could not be straightened by the sound. The method of using the intra-uterine stem and the cautions about its introduction are very fully stated in the paper. The speaker was happy to respond to the remarks of Dr. Hodge in reference to the influence of posture upon a retroverted uterus, and agreed with him to the extent that as long as the patient remains in the posture on the knees and elbows the uterus will not come down; but that it will stay there, as many suppose, is not necessarily the case. If we introduce a lever-pessary in that position, when the fundus of the uterus is in the neighborhood of the umbilicus, it will be found that an instrument that is readily introduced and performs its functions perfectly while in that position cannot be tolerated for a moment when the patient resumes the upright posture, when the weight of the viscera bears down upon it. The fundus of the uterus will often be found to creep down behind over the posterior bar of the pessary, while the anterior bar of the lever will be carried up over the pubes. He had seen this occur time after time. In such patients he has had to temporize and use other measures to reduce the size of the uterus before allowing them to walk.

He would acknowledge freely that some of these cases do not bear the intra-uterine stem; but he considered them as exceptions. As the rule, the irritability is not so great in these

old cases, in which the uterus has assumed a version or retroversion, as in ordinary cases of flexion. As to the amount of this tolerance, we cannot formulate a rule; it is greater in some than in others, but there are very few cases in which this flexible stem, if the uterus bears its introduction, could not remain for a considerable length of time, as it occupies no considerable space. He had rarely met with a case in which it would not pass readily into the canal. When irritation occurs, it is never in the cervical canal, but always in the uterine cavity proper; he had, therefore, never found it necessary to adopt the recommendation of Lawson Tait, to cauterize the cervical canal prior to introducing the stem. The amount of irritation caused by this hard-rubber instrument must be very slight, and he was at a loss to understand Dr. Emmet's opposition, which had been spoken of, but it is very evident, from what he says in his writings, that he has never used it, and, therefore, can scarcely give a fair estimate of its value. Dr. Emmet says that you might as well expect to straighten out a chordee with a steel sound as to treat a flexed uterus with the intra-uterine stem; but there is no parallelism between the two: one is temporary, the other is permanent and organic.

The question has been raised as to the permanency of the result. The clinical history of cases was purposely omitted from the paper on account of its length, but he could state, from his own experience, that in the majority of cases the canal continues straight. In many cases pregnancy has occurred after removal of the stem. He was unable to see any force in Dr. Taylor's objection, since the sound would always be introduced prior to the stem, and no attentive practitioner would explore the cavity of the womb without first satisfying himself of the non-existence of pregnancy; and there are so many other methods of producing abortion that this would scarcely be resorted to.

In regard to mortality, he had not seen any case where death had resulted directly from this instrument; but he had seen one case where perimetritis existed, but he believed that the stem had nothing to do with the result, as he afterwards discovered that all the symptoms—fever, etc.—had existed prior to the introduction of the pessary. He had in some cases been called upon to remove the instrument, but, as he had already stated, he only recommended its use where every other means have failed, and under the cautions specified in his paper.

In regard to conception during the retention of the pessary, he could not positively say that it has ever occurred, but he has now a patient who has missed one period. In such cases the pessary is removed, as it would inevitably produce abortion. Dr. Goodell has reported a case where a Chambers's double stem-pessary was used and removed

at the end of the second month: the patient, however, aborted a month later. He believed that Dr. Harlow had mentioned two cases where pregnancy had occurred. For his own part, he did not see why conception should not occur. The stem occupies so little space, and is so flexible, that it would favor rather than prevent the spermatic fluid from entering the uterus.

PATHOLOGICAL SOCIETY OF PHILADELPHIA.

THURSDAY EVENING, FEBRUARY 26, 1880.

THE PRESIDENT, DR. S. W. GROSS, in the chair.

Carcinoma of the stomach. Presented by Dr. MORRIS LONGSTRETH.

I AM indebted to Dr. Thomas George Morton for the specimen and the history of the following case:

The patient was an Israelite, æt. 56, had long been engaged in a manufacturing business, and had always enjoyed good health. He consulted Dr. Morton on April 22, 1879, on account of certain vague symptoms, which perhaps can be best summarized by saying that the patient was not in his usual good health, and that his digestion was poor. The patient passed a very large amount of urine daily, and an examination showed its specific gravity to be 1033. Several careful tests with Fehling's solution for sugar resulted in an uncertain reaction. The fermentation test, however, showed a marked diminution of specific gravity of the urine, with the development of carbonic acid gas after the completion of the process. The diagnosis was made at first of diabetes mellitus, the irritability of the stomach being due to this cause. About a month later the patient began to reject his food at irregular periods. The vomiting usually did not occur until a number of hours after the reception of the food into the stomach; the patient would frequently eat his dinner and supper and not vomit until the following morning. By the beginning of June the increased frequency of the vomiting, together with a change in the general aspect of the patient, indicated that the patient was suffering from some organic disease of the stomach. The gastric symptoms were confined to a feeling of distress and the vomiting; there was no pain, no sense of fulness or hardness on palpation of the epigastrium, and no vomiting of blood and no bloody stools occurred. During June and July Dr. Morton did not see the patient, being in Europe during this time, but on his return, in August, he found the patient vomiting much more frequently and regularly after taking food. At this time a tumor could readily be felt in the epigastrium; the patient was greatly emaciated and presented a markedly cachectic appearance. It was now no longer doubtful that the illness

was due to malignant disease of the stomach. The gastric distress, constantly present, remained the same, the inability to retain food greatly increased, and the emaciation steadily progressed, and with it the deepening of the cachectic appearance. From September until the occurrence of death, on December 30, 1879, all attempts at effective nourishing by the mouth had to be abandoned, and resort was made to nutritive rectal injection. This therapeutic resort was regularly carried out thrice daily. The nourishment consisted usually of an egg beaten up with a small portion of brandy and milk; the injections were well borne by the rectum, and the hard, dry faecal mass was voided regularly every day. During all the latter period of life the only material given by the mouth was a little champagne. Late in life dropsical swelling of the legs and abdomen came on, but the emaciation of the body towards the last became extreme in the highest degree, and death resulted from inanition, without further development of symptoms in connection with the stomach. The glycosuric condition of the urine remained as first discovered for some time, but it gradually diminished, and finally disappeared before death. In connection with this symptom I wish to call attention to the involvement of the pancreas in the malignant disease.

The specimen shows a mass composed of the spleen, the stomach, a portion of the liver, with the gall-bladder, and the pancreas. The spleen is firmly attached on the posterior surface of the cardiac extremity. It is much reduced in size, its consistence is firm, and its capsule wrinkled, but, upon section, its tissue appears normal. The pancreas closely adjoins the spleen, and is firmly attached high up on the posterior surface of the stomach. At the lesser curvature of the stomach the liver is firmly attached by a mass of fibrous tissue containing greatly enlarged lymphatic glands. The gall-bladder, which appears about normal size, overhangs the duodenum, just below the pylorus. The stomach, which can hardly be recognized as such, either from its shape or texture, looks like a thick-walled tube which is sacculated at one or two places. Its extreme length, measured in a curved line, is eight inches; its calibre, about that of the undistended transverse colon. Its walls are greatly thickened, measuring half an inch at the pylorus, and about one-quarter of an inch at the middle portion of the greater curvature. The tissue is as firm and rigid as the stoutest sole-leather, and the glands on both its curvatures are greatly enlarged and softened. The peritoneal coat shows numerous very small nodular elevations, and the general surface is somewhat roughened by inflammatory lymph. The muscular coat of the oesophagus at its entrance is very considerably thickened. Its mucous membrane is greatly thickened, tightly adherent by submucous connective tissue, and

is thrown up into very prominent longitudinal folds.

The mucous lining of the stomach seems to have entirely disappeared, except at a small portion at the cardiac extremity.

The transverse section of the wall of the stomach shows the peritoneal coat to be greatly thickened; the muscular coat to be infiltrated with new material, which is seen to be traversed by bands of white fibrous tissue. At all portions of the transverse section of the wall it can be distinctly seen that the ulceration has not extended through the submucous connective tissue, and that the bands of fibrous tissue traversing the infiltrated muscular layer run from the submucous tissue to the peritoneal coat. The mucous-membrane surface of the stomach is everywhere roughened and presents a granular surface.

At some portions, especially at the posterior surface, it is evident that the ulceration has extended into the muscular layer.

A small portion of the liver, attached to the stomach, presents one or two small bean-sized nodules of whitish color, which appear as infiltrations into the fatty-looking liver tissue. One or two large nodules were found in other portions of the liver. The tail of the pancreas presents a large, rounded, nodular mass, which, on section, shows several white, softened, rounded masses. The other portion of the pancreas, on section, shows almost none of the characteristic appearance of the organ; the tissue is pale, and the fibrous tissue is greatly increased, and its ducts appear to be dilated. The head of the organ is involved in a mass of inflammatory lymph, in which are numerous cancerous nodules, perhaps lymphatic glands, perhaps nodules in the tissue of the organ itself.

Just beyond the pylorus, the small portion of duodenum attached to the specimen shows very marked changes of its mucous membrane, with some ulceration. Just within the pylorus the ulceration is very deep, and has removed nearly the whole of the infiltrated wall.

Report of the Committee on Morbid Growths.

—"A microscopical examination of a thin section of the stomach shows the new formation to consist of somewhat large alveoli containing large epithelial cells. The fibrous tissue constituting the alveolar walls is relatively small in amount. The neoplasm is an encephaloid carcinoma.

"March 25, 1880."

Chronic gastritis, with dysentery, etc. Presented by Dr. MORRIS LONGSTRETH.

The patient, Wm. H. C., painter by trade, was admitted to the Pennsylvania Hospital, August 9, 1877. He had contracted syphilis three years previous, and the primary lesion was followed by secondary manifestations; of this disease he appeared to be well, and the illness from which he suffered on admission to the hospital was not con-

nected with its results. He appears to have suffered considerably from diarrhœa at various times; he had been in the war of the rebellion and in the swamps of the Chickahominy (but had never had malaria); he had dysentery while in the army in 1864. About three years before admission he was caught between a wagon and a train of cars, and received a contusion of the abdomen, which confined him to bed for six weeks. Two years ago he had an attack of fever, while in New Orleans, characterized by pain in his body and by delirium; the illness lasted about four weeks, but was not accompanied by diarrhœa. Since then he has never felt quite well, and three months subsequently he noticed that his skin was sallow, and he felt dull and drowsy. Six weeks before admission he was attacked by diarrhœa, without any known cause, and shortly after this his legs began to swell.

On admission he appeared emaciated, of a dirty, sallow complexion, but the eyes did not seem especially discolored. He was having six or seven passages daily, loose in character, but not watery, slimy, or bloody, and there was no tenesmus, but occasional cramps in the abdomen. Tongue not coated, but pale and smooth. The splenic dulness did not extend to the margin of ribs. The liver was slightly increased in size. The gums were pale, but not spongy. The urine was normal. His general condition remained about the same for several months; generally confined to bed. The diarrhœa at times improved, and then again relapsed. In the latter part of November, 1877, the diarrhœa had become pretty constant and exhausting, and continued in spite of treatment and regulated diet. Towards the latter part of the time his appetite, which had been pretty good, failed. There was no nausea or vomiting, but he occasionally complained of obscure epigastric soreness, and there was a feeling of obscure resistance in the epigastric region, but the position did not correspond to the locality of his sense of soreness; there was no dulness on percussion over the abdomen, and there was no complaint of positive pain.

Post-mortem examination, by Dr. Longstreth.—Rigor mortis moderate; emaciation extreme; œdema of lower extremities.

Cavities.—The abdomen contained a considerable amount of serum; there was no evidence of recent inflammation. The omentum was rolled up over the stomach, and was tightly adherent.

Both *pleural* sacs showed some old fibrous adhesions, and the cavities contained considerable clouded serum, with clots of fibrin floating in it. No evidences of inflammatory action.

The *pericardium* was normal.

Heart.—Right side relaxed, but contained only a small amount of fluid blood and a few small clots. Left ventricle firmly contracted

and empty. The organ was reduced in size; its orifices, valves, and cavities showed nothing abnormal. Its tissue was moderately firm and evidently atrophied, but not fatty. Weight, seven ounces avoirdupois.

Lungs.—These organs showed nothing especial to note.

Spleen.—It was of small size; its capsule was wrinkled and pale; consistence flabby, and its tissue anæmic and moderately resistant. Weight, five ounces avoirdupois.

Kidneys.—Both were small, pale, moderately firm, and slightly irregular in outline, but presented no special morbid change. Weight, four and a half ounces, left; four ounces, right.

The *liver* was small, regular in outline, pale and anæmic; its capsule was roughened by a few fibrous adhesions; its tissue was evidently atrophied, giving the appearance of a relatively greater amount of fibrous tissue, but there were no indurative or cirrhotic changes. Weight, two and a half pounds.

The stomach presented the appearance of a rigid, thickened wall-sac, having a length of six and a half inches; it is two and a half inches wide at the cardiac extremity, and one and a half inches wide at the pyloric end. Its peritoneal surface is rough, especially on the anterior surface, along the greater curvature where the rolled-up omentum was attached. At the posterior part of the cardiac extremity the organ was so firmly adherent to the part behind that its wall was torn in removing it. The only portion of the stomach that has a normal feeling when handled is a small portion just at the pylorus.

On opening the stomach its mucous membrane presented a condition of ulceration throughout nearly its whole extent, and its walls throughout their whole circuit were enormously thickened. At the œsophageal opening the muscular tunic was greatly thickened, but the mucous membrane was smooth and normal-appearing. At all other portions, excepting near the pylorus, the whole internal surface presented a rough, somewhat shaggy aspect; at parts the ulceration had extended in depth to the muscular layer, the fibres of which were distinctly visible; at other parts the surface was covered with shreds of the mucous or submucous coats. The edges of the ulceration, both towards the œsophageal opening and the pyloric extremity, presented thickened, everted borders composed of the epithelial layers.

A small portion of the mucous-membrane surface at the pylorus showed the rugæ as in a healthy stomach, but its epithelial covering appeared to be to a considerable extent removed: however, the surface was smooth, and there was no appearance of ulceration.

A vertical section of the stomach-walls showed enormous thickening of all its coats, measuring in places half an inch. The thick.

ening especially affected the muscular tunic, but there was great increase of the outer coat, and also of the mucous and submucous layers, except, of course, where the ulceration had destroyed the inner lining. From the fibrous and peritoneal coat, bands of connective tissue could be seen, on the surface of a section, dipping down and passing in between the bundles of muscular fibres. So great was the increase of the muscular tissue that there appeared to be many layers of muscles, instead of the normal number.

The *lymphatic glands* along the lesser curvature of the stomach were found enlarged and swollen, homogeneous on section, but not softened.

The *duodenum* directly without the pylorus appeared nearly normal, but beyond this its walls were thickened; its peritoneal coat was roughened by fibrous inflammatory tissue, and its mucous membrane in a state of catarrhal inflammation, but not ulcerated.

The *small intestine* showed throughout its length the results of a former morbid condition of its mucous membrane, especially thickening of its walls.

The *large intestine* was very greatly thickened and in places contracted. Its mucous membrane showed evidences of old and deep ulceration; but in most places it was healing, and presented a smooth, board-like aspect.

The *mesenteric glands* were found much enlarged.

The *gall-bladder* contained but little bile, which was of a very pale color and contained considerable mucus.

Microscopic Examination of the Stomach-Wall.—The changes in the structural elements of the tissue are so great that it requires considerable study to identify them and to distinguish the several layers.

Commencing at the outer surface, the peritoneum is found to be covered by a *layer of fibrous material* varying in thickness at different parts. This material presents a rough, shaggy surface; it is well organized, and shows numerous very small capillary vessels passing between its fibres; at parts there are seen very many indistinct cellular elements. It is firmly attached to the peritoneum, on which it is placed.

The subperitoneal tissue, which can be distinguished by the numerous vessels, seen mostly in cross-section, in it, is very much thickened. Its fibres are firm and coarse, and closely matted together. The vessels in this part are larger than usual, more numerous, and their walls thickened, and large lymphatic vessels are to be seen in it containing granular cells or nuclei.

Next to this coat comes the muscular tissue, in which can be seen layer after layer of alternate bands of muscular fibres, presenting first the ends of their cells cut in cross-section and then running parallel to the length of the fibres; again in other parts the muscular

bands are seen running in oblique directions. The bands of muscular fibres are often widely separated by layers of connective tissue, and occasionally this connective tissue is visible passing in a perpendicular direction through the muscular bands. That it is not only an increase of the amount of muscular tissue, but also a true hypertrophy of this tissue, is evidenced by the multiplication by division of nuclei of the muscular fibres, which can be seen occasionally in some parts of the section where these fibres have been cut transversely. Quite a number of vessels can be seen, some cut transversely, some longitudinally, running in various directions in the muscular-fibre layer. These vessels are frequently seen surrounded by clusters of small cells, which stain deeply, and are also accompanied by or have in their neighborhood lymphatic vessels, filled with brightly-stained cells of the same character.

The limitations of the muscular and submucous layers are well marked in nearly all parts of the sections by an expanse of considerable breadth of much coarser fibrous tissue.

The submucous layer is clearly to be recognized by the numerous large-lumened, thick-walled arterioles seen in it. It is composed of coarse-fibred connective tissue, which twists and sweeps in bands of varying width in every direction. It presents in very many places heaps and aggregations of small cells, which are perhaps more numerous around the vessels than at other portions; frequently no vessels can be seen in the section near them, and they are found placed in clefts surrounded by firm bands of fibres. The lower surface of this layer, next the muscular coat, shows a pretty even, level surface; but its upper surface, towards the mucosa, is seen thrown up in folds like the normal rugae of the stomach. Near the upper surface the cell-aggregations are more numerous and stain more deeply than in the lower depths of its tissue.

The division between the latter layer and the mucosa is made by a broad layer of basement membrane. This basement membrane at its broadest part occupies three-fourths the width of the field of view of a $\frac{1}{4}$ inch objective with the B eye-piece, tube out, magnifying 350 diameters. Examined under low power (50 \times), this layer appears as a band, less well stained than the subjacent submucosa, and strikingly in contrast in this respect to the comparatively brilliant-colored overlying mucosa. Under the high power the basement membrane is but poorly differentiated as to its constituents from the submucous tissue, and in places seems to pass over directly into it. It is, however, everywhere distinctly marked, either by differences of appearance or by the heaping up of small round cells just below its under boundary. The basement membrane appears at most

places to be made up in the following manner. On the surface of the submucosa is a thin band of fibres running parallel to the surface, and from this pass up fibres, which either end in spiral fibres, or, running vertically upwards, partition off the basement membrane into compartments; these compartments form two rows, bounded on two sides by the straight fibres, running parallel to the length of the basement, and on the other two sides by fibres running transversely and given off laterally from the straight fibres. These compartments generally seem to be filled with fibres derived, as already stated, from the limiting bands of the basement membrane, which within the compartments twist in spiral figures towards the centre; sometimes the fibres appear arranged concentrically. Within the compartments are seen small cells or nuclei, apparently having a direct connection or attachment to the fibres which fill these spaces.

The basement membrane, therefore, viewed as a whole, is composed of three bands of straight fibres,—an exterior, a middle, and an interior (towards the mucosa) set. Between these bands are the compartments (so called) which are divided by transverse bands.

The continuity of the basement membrane is broken at several places by clefts, through which pass tube-like structures, the nature of which it is difficult to determine with certainty. Some of them are, I think, capillaries,—this view is rendered probable from their close relation to vessels situated in the submucosa; others resemble lymphatics; and one is apparently a tubular gland. (In all the section examined, in which the appearance described is seen, these structures show only portions of their whole extent, either of their length or of their calibre, so that their exact nature must be left undetermined.)

At many parts of the mucous-membrane surface the effects of ulceration are visible, and at the other portions, which are maintained, the surface is much changed by post-mortem action. The thickness of the mucosa is evidently increased. At the deeper portions of this layer only can the structure and condition of the parts be well studied. In some portions the tubular structure is well maintained, although the cells are highly granular; at others, whilst the outlines of the tubes can be made out, the cells are seen to be greatly degenerated, and for the most part loosened from their connection with the basement membranes of the tubules, and many of the tubules are stuffed with granular debris. Many tubules also are dilated, some still maintaining their epithelial lining, whilst others, which are dilated into cysts, have as their limiting membrane only the thickened basement membrane of the tubule. The intertubular connective tissue is everywhere increased, mostly presenting a coarse-fibred condition, but in others very delicate spindle-shaped cells are visible. In a few places the

terminations of the tubules at the basement membrane of the mucosa show distinct budding dilatations, like the arrangement of a racemose gland; in one instance three bud-like projections were seen from one tubule. In general the condition of the mucous membrane is that due to a chronic catarrhal inflammation, followed by ulceration.

Remarks.—This case is a remarkable one from the very great alterations found in the stomach,—remarkable from the comparatively slight evidences of disease of this organ witnessed during life. From the history of the case, it is not very easy to determine with accuracy the beginning of the process which produced the morbid appearances found after death. The life-history of the case, as given by the man, is probably not a full one, as so commonly happens with patients of his class. It is clear that for a long time previous to his death he had been subject to disease of the digestive apparatus, which had at times culminated in severe diarrhoea or dysentery. His army-life, both during the war and since then, would certainly have acted as a predisposing cause. The clinical history shows, and the post-mortem examination confirms the fact, that he was not subject to several of the predisposing causes of chronic gastritis. He did not have lung- or heart-disease; he was not a drunkard; there was no evidence of malarial poisoning; and there was no cirrhotic condition of his liver.

There are three factors in the production of the morbid condition which remain for consideration. Three years before admission to the hospital he received a contusion of the abdomen, which was certainly of a severe character, as the history shows. There is no evidence that this injury directly affected the stomach; the position of the organ, to a greater or less degree, shields it from direct violence, except from blows aimed particularly towards its position. The patient seems to have recovered from the accident completely, and subsequently, as well as at the time, the violence does not seem to have produced gastric symptoms. The illness from which he suffered two years previous to admission, while in New Orleans, is of so uncertain a character, and the details of his condition at the time are so meagre, that no positive connection can be shown between its nature and the disease which produced death.

That the patient had had dysentery, and subsequently was affected with diarrhoea, seem to me to be the leading features in the case. Whether the dysentery and diarrhoea were symptomatic of long-existing and slowly-increasing changes in the mucous membrane of the whole alimentary canal the history does not indicate, or whether the attack of dysentery was the initial symptom of the disease. The question of lead-poisoning being the origin of the disease can, I think, be passed

by, as such a theory is entirely unsupported by evidence.

We are compelled, I think, to conclude that the morbid condition was the result of disease commencing in the mucous membrane of the alimentary canal; and it remains to be discussed whether the trouble commenced in the intestine (the colon) and was propagated upwards, or whether the beginning of the disease was in the stomach, and that from it the intestinal tract became involved also.

I am not inclined to accept the first one of these views, viz., the propagation of the inflammation upwards from the bowel to the stomach, although, as is known, an involvement of the gastric mucous membrane does result from severe chronic dysentery, not, however, without producing in the first place grave disease of the liver. The simple propagation of a catarrhal inflammation *upwards* from one extremity of the alimentary canal to the other, and the production of such alterations of the stomach as are found in this case, are unknown.

The supposition that the disease began as a catarrhal affection of the gastric mucous membrane and extended downwards, perhaps complicated with an intercurrent attack of dysentery and also by the injury received by the abdominal viscera, satisfies more completely the state of organs found at the autopsy, and is entirely consistent with the clinical history as given by the patient.

The disease commenced most probably in a subacute gastritis, and passed under the head of dyspepsia, of which the patient took little or no notice; we have no account of any acute attack, unless his illness in New Orleans be of this nature. After the changes of the gastric mucous membrane were once established, the disease must necessarily have become a progressive one, and would be aggravated by successive attacks of dysentery and diarrhoea, and would also have been strongly provocative of such attacks.

That a stomach should be so altered in its anatomical structure, and necessarily also in its functional action, is, I think, to be accounted for naturally by one of the most prominent changes in it as seen by the microscope, viz., the very great hypertrophy of its muscular fibres. Ordinarily in chronic gastritis, the distress from which patients suffer is due in a large degree to the food remaining in the stomach undigested, and, by decomposition and fermentation, producing gases and acids of a nature highly irritating to the diseased mucous membrane. In a stomach such as found in this patient, the enormously hypertrophied muscular wall would, by contraction, rapidly hurry the food into the intestine, not only before it had digested, but before decomposition took place: hence the stomach would be relieved of the cause of usually occurring pain and distress. But, while this condition of the muscular wall of the stomach tended

to relieve that organ, the same condition would necessarily act unfortunately for the intestine. No more common source of intestinal catarrh exists, or one that acts with more energy, than the presence of undigested food in contact with the intestinal mucous membrane; and to this condition of the stomach we must look for the explanation of anatomical changes seen in the bowel.

(To be continued.)

GLEANINGS FROM EXCHANGES.

PILOCARPIN AS AN ANTIDOTE TO ATROPIN.—Dr. Purjesz, of Buda-Pest, relates in the *Centralbl. für Prakt. Augenheilk.* the case of a patient, aged 19, who took, for medical purpose, a watery solution of nearly two grains and a half of sulphate of atropin. When the patient was seen by him, an hour afterwards, the symptoms of poisoning were very severe. He at once administered, by subcutaneous injection, muriate of pilocarpin in doses of 0.4 grain every five or ten minutes; the quantity given amounted in all to 6.4 grains. The result was remarkable: the toxic symptoms gradually receded, and at the end of three hours from the time of taking the atropia the patient had quite recovered. Even the dilatation of the pupils, which had taken place to the greatest extent, had completely passed off.

USTILAGO MAIDIS.—From *ustilago maidis* I have obtained very positive results. It is superior to ergot of rye in labor. It does not cause nausea, and gives better satisfaction in various ways. It seems to be more certain in its effects towards labor, and renders what otherwise would be a tedious and distressing case a natural and easy one. It stops hemorrhage quicker than its rival; but in making use of it I would advise practitioners to be alive in regard to the secundines, for they follow with expedition, in which case I also find that the thoroughness of the contractions makes it safer for the patient. I have used it in one case (this week) of expulsion of sarcomatous uterine tumor, and with success and satisfaction.—J. I. BROWN, M.D., in *The Medical Summary*.

PRODUCTION AND INCREASE OF SECRETION OF MILK BY THE RICINUS COMMUNIS.—MM. Boucher and Fonssagrives have established the efficaciousness of this method of increasing or re-establishing the secretion of milk. It is used thus. A handful of the leaves of the *Ricinus communis* are boiled in a litre of water; the breasts are bathed with this decoction for fifteen or twenty minutes; there is then applied to the nipples a poultice made with a part of the same leaves, and they are left on till they have become dry. The result is obtained after a few hours; but if the secretion is very tardy, we may add to this the employment of fumigations of the boiled leaves directed to the genital organs.

MISCELLANY.

AMERICAN HEALTH PRIMERS.—Since our last notice three more of the little volumes of this series have appeared: "Brain-Work and Over-Work," by Dr. H. C. Wood, which bears the marks of haste, and would be improved by careful revision; "Our Homes," by Dr. Henry Hartshorne, which is exactly what one would have expected from its well-known author; and "Sea-Air and Sea-Bathing," by Dr. John H. Packard, an excellent little manual for the sea-side visitor.

THE Rev. J. G. Wood, the well-known writer on entomology, is responsible for the statement that in some parts of Brazil ants are used for sewing up wounds. He says,—

"They simply pinch the edges of the wound together and hold the ant to it. The creature immediately bites at the obstacle, making its jaws meet. The native surgeon pulls away the body, leaving the head still adhering. Seven or eight ants' heads are sometimes employed for a single wound."

"It seems almost incredible," says *The Practitioner*, in a review of Dr. Tyson's work on "The Cell Doctrine," "that the first recognition of the cell as a physiological unit should have been made by two men still alive,—Professors Schleiden and Schwann,—for since their memorable discovery the cell doctrine has received such wide development as seems to demand a much longer period than a single lifetime."

THE fourth edition of Dr. George Wilson's "Hand-Book of Hygiene" has just been published by Lindsay & Blakiston, of this city. We note its appearance with pleasure, as the token of deserved success.

DR. SHARPEY, the physiologist, best known as the joint author with Dr. Quain of a very fine illustrated work on anatomy, has just died at the age of seventy-eight.

NOTES AND QUERIES.

ERRATUM.

In Dr. Prentiss's paper in the *Times* for April 24, read 0.03 *gramme* instead of *grain* as the proper strength of the opium suppository.

OFFICIAL LIST

OF CHANGES OF STATIONS AND DUTIES OF OFFICERS OF THE MEDICAL DEPARTMENT U. S. ARMY FROM APRIL 18 TO MAY 1, 1880.

MOORE, JOHN, MAJOR AND SURGEON.—His leave of absence granted him July 24, 1879, from A. G. O., extended two months. S. O. 99, A. G. O., April 23, 1880.

HEGER, A., MAJOR AND SURGEON.—Assigned to duty as Post-Surgeon at Fort Clark, Texas. S. O. 78, Department of Texas, April 24, 1880.

GODDARD, C. E., MAJOR AND SURGEON.—When relieved by Assistant-Surgeon Waters, to comply with S. O. 74, c. 2, A. G. O., in his case. S. O. 78, c. 2, Department of Texas.

WATERS, W. E., CAPTAIN AND ASSISTANT-SURGEON.—When relieved by Surgeon Heger, to report to the Commanding Officer, Fort McKavett, Texas, for duty as Post-Surgeon, relieving Surgeon C. E. Goddard. S. O. 78, c. 2, Department of Texas.

MEACHAM, F., CAPTAIN AND ASSISTANT-SURGEON.—So much of Par. 1, S. O. 74, c. 2, A. G. O., as relates to him is revoked. S. O. 87, A. G. O., April 20, 1880.

HALL, J. D., CAPTAIN AND ASSISTANT-SURGEON.—Assigned to duty as Post-Surgeon at Fort Randall, D. T. S. O. 42, Department of Dakota, April 13, 1880.

WINNE, C. K., CAPTAIN AND ASSISTANT-SURGEON.—When relieved by Assistant-Surgeon Corbuser, to comply with Par. 1, S. O. 74, c. 2, A. G. O. S. O. 32, Department of the Platte, April 13, 1880.

AINSWORTH, F. C., CAPTAIN AND ASSISTANT-SURGEON.—The operation of so much of Par. 1, S. O. 74, c. 2, A. G. O., as relates to him is suspended until September 1, 1880. S. O. 83, A. G. O., April 22, 1880.

MERRILL, J. C., FIRST-LIEUTENANT AND ASSISTANT-SURGEON.—Relieved from duty at Fort Shaw, M. T., and assigned to duty as Post-Surgeon at Fort Custer, M. T., relieving Assistant-Surgeon L. S. Tesson, to enable him to comply with S. O. 74, c. 2, A. G. O. S. O. 42, c. 2, Department of Dakota.

SHANNON, W. C., FIRST-LIEUTENANT AND ASSISTANT-SURGEON.—The operation of so much of Par. 1, S. O. 74, c. 2, A. G. O., as relates to him is suspended until October 1, 1880. S. O. 87, A. G. O., April 20, 1880.

CORBUSER, W. H., FIRST-LIEUTENANT AND ASSISTANT-SURGEON.—Relieved from duty at Camp Sheridan, and assigned to duty at Fort Washakie, Wyo. T. S. O. 32, c. 2, Department of the Platte.

HEADQUARTERS, DEPARTMENT OF DAKOTA,
ST. PAUL, MINN., March 18, 1880.

GENERAL ORDERS,
No. 8.

It is with great sorrow that the Department Commander announces to the officers and men serving under his command the death of the Medical Director of the Department, Surgeon WILLIAM J. SLOAN, Colonel and Brevet Brigadier-General in the army.

Surgeon Sloan entered the service as an Assistant-Surgeon on the 12th day of July, 1837. He became a Surgeon, with the rank of Major, on the 20th of December, 1855, and was promoted to be Lieutenant-Colonel, June 26, 1876; to be Colonel, April 28, 1877. On the 13th of March, 1865, he received the Brevet of Colonel, "for faithful and meritorious services during the war," and on September 28, 1866, the Brevet of Brigadier-General, "for meritorious and distinguished service at several military posts in New York Harbor, where cholera prevailed."

During a period of more than forty-two years Surgeon Sloan rendered faithful service in nearly every part of the country, from the Atlantic coast to New Mexico, from Florida to Minnesota; and in his later years was successively the Medical Director of the Departments of the Northwest, of the East, of the South, and of Dakota, closing his long and most honorable career while in the full performance of the duties of that office here.

It would be impossible, within the limits of a General Order, to do justice to the services and to the professional ability of an officer such as Surgeon Sloan was. Equally difficult would it be to do justice to his character as a man. To the highest conception of the demands of duty and the loftiest sense of honor he united very remarkable simplicity and directness of character, and a most kindly and gentle nature. To great clearness and force of intellect, and thorough mastery of his profession, he added administrative and executive ability such as is rarely equalled. During the long and distressing illness which preceded his death his mind retained its accustomed vigor, and, although struggling with disease, he continued till the day preceding his dissolution to discharge every duty which devolved upon him. He lived without an enemy. He died beloved and lamented by all who knew him.

In respect for his memory, all officers on duty at the Headquarters of this Department, and all officers of the Medical Corps serving in the Department, will wear the usual badge of mourning for the period of thirty days.

BY COMMAND OF BRIGADIER-GENERAL TERRY:

GEORGE D. RUGGLES,
Assistant-Adjutant-General.

OFFICIAL: Captain Eighteenth Infantry, A. D. C.